Galaxy
SCIENCE FICTION

JULY 1956
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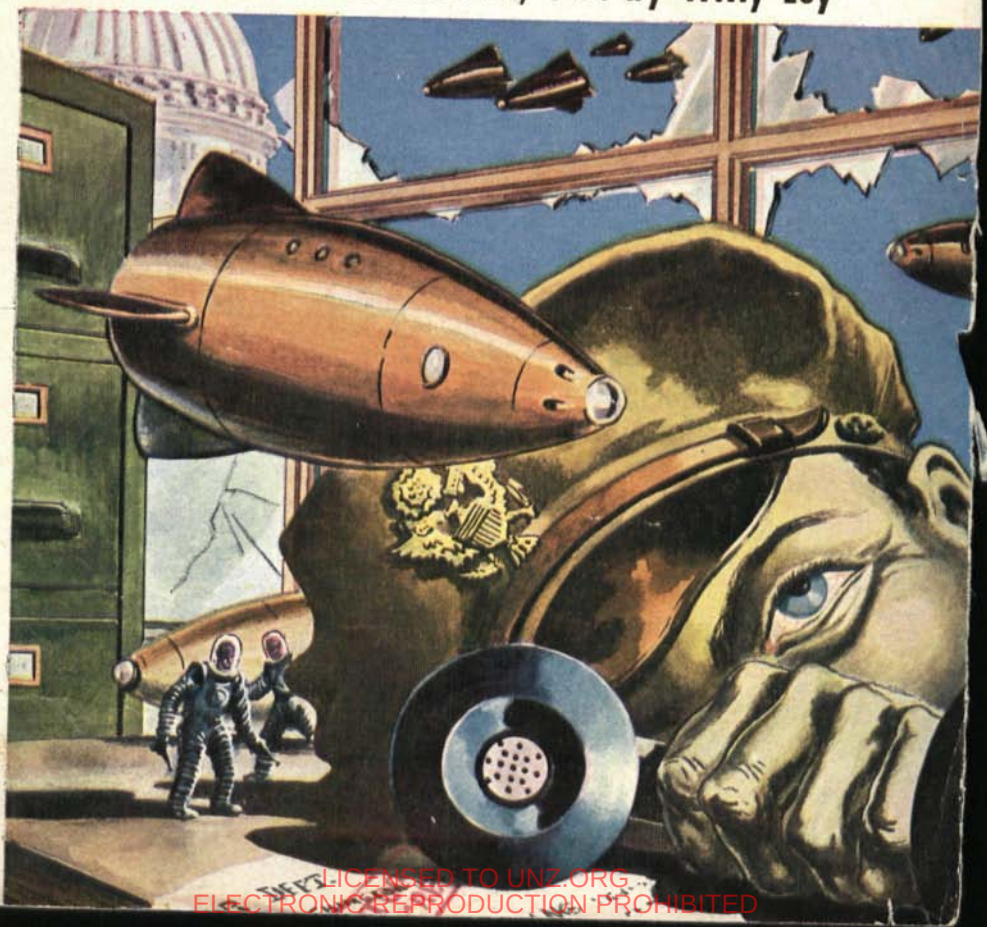
by Clifford D. Simak

SKILLS OF XANADU by Theodore Sturgeon

WELCOME TO REALITY, C-T! by Willy Ley



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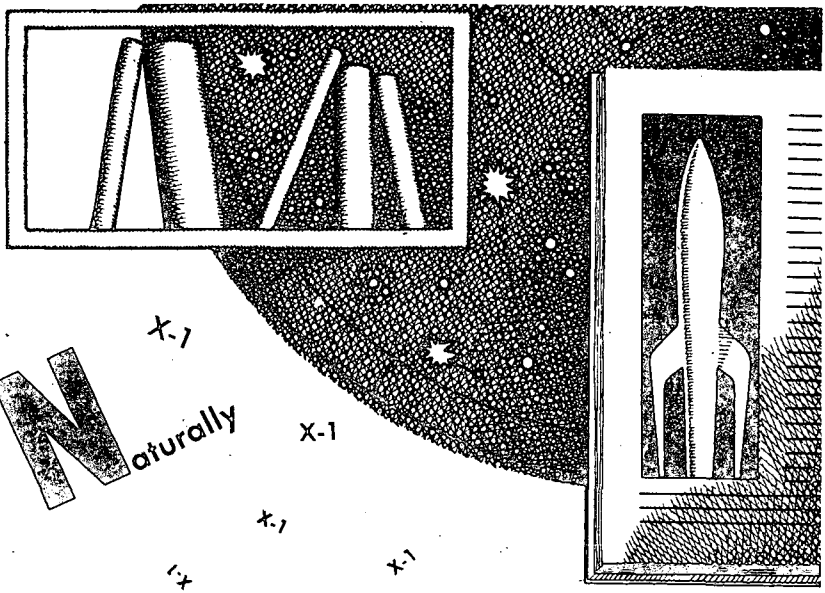

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JULY, 1956 VOL. 12, NO. 3

Galaxy
SCIENCE FICTION

ALL ORIGINAL STORIES • NO REPRINTS!

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NOW LOOK!

SOME months back, I issued an intelligence report that allowed only one conclusion: There Are Aliens Among Us.

My intent was to inform without alarming. Evidently I succeeded, for out of the jumble of letters received, only one was intelligible and therefore clearly from a human reader.

"This is in reference to your article in the March issue of GALAXY entitled 'Look Now!' It is strange how one may brood for years over a problem and then suddenly have it brought into focus by reading another's views on the subject. The similarity between your conclusions and mine is, if you'll pardon the expression, astounding.

"The subject is my wife. It happens that she has been a very good wife and I have no desire to alter our relationship, even if she is an alien. Good wives are not easy to find and represent a substantial investment. Therefore, I am signing this with a pseudonym and mailing it from a false address — and request that *both* be kept confidential.

"Many of her statements are perfectly ordinary spoonerisms. Her reference to a '*platation from Quoto*' is an example of this. As you suggest, perhaps it is a deliberately cultivated type of protective coloration designed to draw attention away from those slips even the best of agents, human or otherwise, inevitably make.

"Some of these verbal prat-falls are quite humorous, which supports your theory, for humans are notoriously uncritical when laughing. For instance, she doesn't care for a neighbor's home because she says she doesn't like '*overwrought iron.*'

"Yet a certain chilling alien viewpoint occasionally reveals itself. Ever since my wife told me that the '*washee-pot needs coughing,*' I have become uncomfortable in the presence of all pots. I keep wondering if this or that pot is a washee-pot and if it intends to cough.

"I will give you three more examples and ask you to think about them. I have tried to reason them out, but I always somehow get the feeling that my mind is going cross-eyed. Here they are:

"'*It's half of one and six-a-dozen of the other.*' Close questioning has ascertained that this is meant to indicate two equal quantities, but I challenge any

(Continued on page 144)

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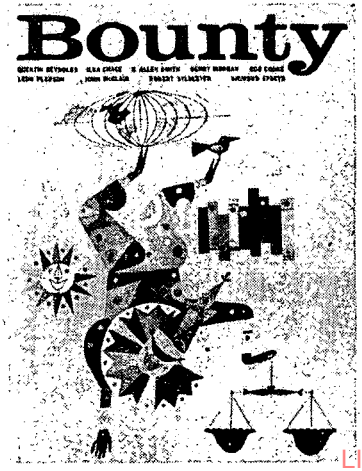

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Drop Dead

By CLIFFORD D. SIMAK

Illustrated by EMSH

THE critters were unbelievable. They looked like something from the maudlin pen of a well-alcoholed cartoonist.

One herd of them clustered in a semicircle in front of the ship, not jittery or belligerent — just looking at us. And that was strange. Ordinarily, when a spaceship sets down on a virgin planet, it takes a week at least for any

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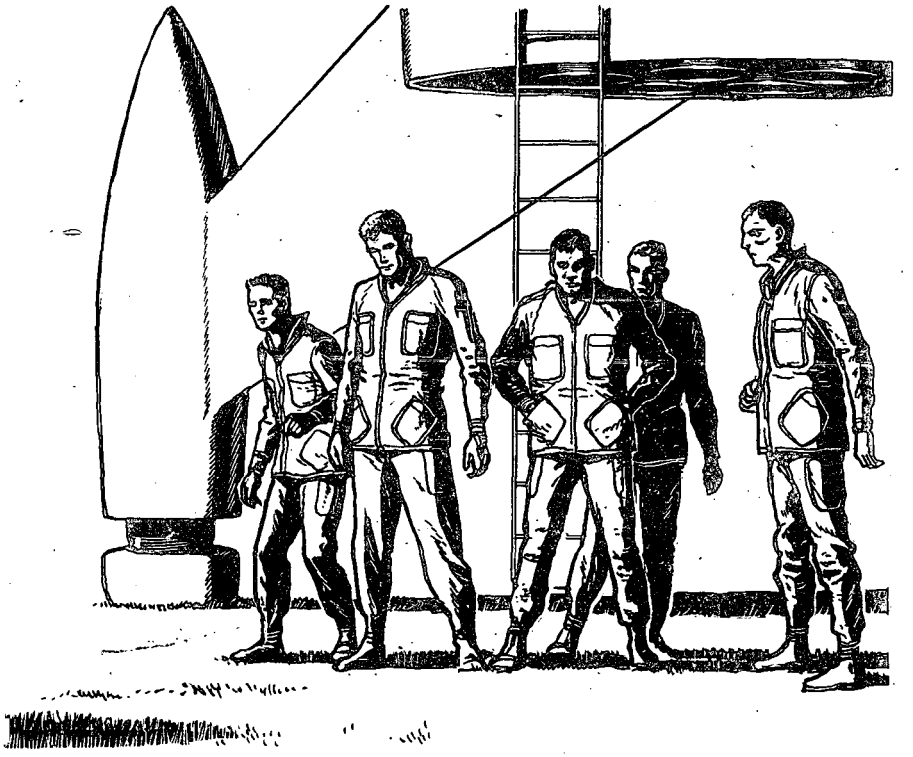
Here was the perfect world—accommodating and peaceful—but how it got that way was less ghastly than how it stayed that way!



life that might have seen or heard it to creep out of hiding and sneak a look around.

The critters were almost cow-size, but nohow as graceful as a cow. Their bodies were pushed together as if ever blessed one of them had run full-tilt into a wall. And they were just as lumpy as you'd expect from a collision like that. Their hides were splashed with large squares of

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pastel color — the kind of color one never finds on any self-respecting animal: violet, pink, orange, chartreuse, to name only a few. The overall effect was of a checkerboard done by an old lady who made crazy quilts.

And that, by far, was not the worst of it.

From their heads and other parts of their anatomy sprouted a weird sort of vegetation, so that it appeared each animal was hiding, somewhat ineffectively, behind a skimpy thicket. To compound the situation and make it completely insane, fruits and vegetables — or what *appeared* to be fruits and vegetables — grew from the vegetation.

So we stood there, the critters looking at us and us looking back at them, and finally one of them walked forward until it was no more than six feet from us. It stood there for a moment, gazing at us soulfully, then dropped dead at our feet.

The rest of the herd turned around and trotted awkwardly away, for all the world as if they had done what they had come to do and now could go about their business.

JULIAN OLIVER, our botanist, put up a hand and rubbed his balding head with an absent-minded motion.

"Another whatisit coming up!" he moaned. "Why couldn't it, for once, be something plain and simple?"

"It never is," I told him. "Remember that bush out on Hamal V that spent half its life as a kind of glorified tomato and the other half as grade A poison ivy?"

"I remember it," Oliver said sadly.

Max Weber, our biologist, walked over to the critter, reached out a cautious foot and prodded it.

"Trouble is," he said, "that Hamal tomato was Julian's baby and this one here is mine."

"I wouldn't say entirely yours," Oliver retorted. "What do you call that underbrush growing out of it?"

I came in fast to head off an argument. I had listened to those two quarreling for the past twelve years, across several hundred light-years and on a couple dozen planets. I couldn't stop it here, I knew, but at least I could postpone it until they had something vital to quarrel about.

"Cut it out," I said. "It's only a couple of hours till nightfall and we have to get the camp set up."

"But this critter," Weber said. "We can't just leave it here."

"Why not? There are millions more of them. This one will stay right here and even if it doesn't—"

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"But it dropped dead!"

"So it was old and feeble."

"It wasn't. It was right in the prime of life."

"We can talk about it later," said Alfred Kemper, our bacteriologist. "I'm as interested as you two, but what Bob says is right. We have to get the camp set up."

"Another thing," I added, looking hard at all of them. "No matter how innocent this place may look, we observe planet rules. No eating anything. No drinking any water. No wandering off alone. No carelessness of any kind."

"There's nothing here," said Weber. "Just the herds of critters. Just the endless plains. No trees, no hills, no nothing."

He really didn't mean it. He knew as well as I did the reason for observing planet rules. He only wanted to argue.

"All right," I said, "which is it? Do we set up camp or do we spend the night up in the ship?"

That did it.

WE HAD the camp set up before the sun went down and by dusk we were all settled in. Carl Parsons, our ecologist, had the stove together and the supper started before the last tent peg was driven.

I dug out my diet kit and mixed up my formula and all of them kidded me about it, the way they always did.

It didn't bother me. Their jibes were automatic and I had automatic answers. It was something that had been going on for a long, long time. Maybe it was best that way, better than if they'd disregarded my enforced eating habits.

I remember Carl was grilling steaks and I had to move away so I couldn't smell them. There's never a time when I wouldn't give my good right arm for a steak or, to tell the truth, any other kind of normal chow. This diet stuff keeps a man alive all right, but that's about the only thing that can be said of it.

I know ulcers must sound silly and archaic. Ask any medic and he'll tell you they don't happen any more. But I have a riddled stomach and the diet kit to prove they sometimes do. I guess it's what you might call an occupational ailment. There's a lot of never-ending worry playing nursemaid to planet survey gangs.

After supper, we went out and dragged the critter in and had a closer look at it.

It was even worse to look at close than from a distance.

There was no fooling about that vegetation. It was the real McCoy and it was part and parcel of the critter. But it seemed that it only grew out of certain of the color blocks in the critter's body.

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We found another thing that practically had Weber frothing at the mouth. One of the color blocks had holes in it — it looked almost exactly like one of those peg sets that children use as toys. When Weber took out his jackknife and poked into one of the holes, he pried out an insect that looked something like a bee. He couldn't quite believe it, so he did some more probing and in another one of the holes he found another bee. Both of the bees were dead.

He and Oliver wanted to start dissection then and there, but the rest of us managed to talk them out of it.

We pulled straws to see who would stand first guard and, with my usual luck, I pulled the shortest straw. Actually there wasn't much real reason for standing guard, with the alarm system set to protect the camp, but it was regulation — there had to be a guard.

I got a gun and the others said good night and went to their tents, but I could hear them talking for a long time afterward. No matter how hardened you may get to this survey business, no matter how blase, you hardly ever get much sleep the first night on any planet.

I SAT on a chair at one side of the camp table, on which burned a lantern in lieu of the campfire we would have had on any other planet. But here we couldn't have a fire because there wasn't any wood.

I sat at one side of the table, with the dead critter lying on the other side of it and I did some worrying, although it wasn't time for me to start worrying yet. I'm an agricultural economist and I don't begin my worrying until at least the first reports are in.

But sitting just across the table from where it lay, I couldn't help but do some wondering about that mixed-up critter. I didn't get anywhere except go around in circles and I was sort of glad when Talbott Fullerton, the Double Eye, came out and sat down beside me.

Sort of, I said. No one cared too much for Fullerton. I have yet to see the Double Eye I or anybody else ever cared much about.

"Too excited to sleep?" I asked him.

He nodded vaguely, staring off into the darkness beyond the lantern's light.

"Wondering," he said. "Wondering if this could be the planet."

"It won't be," I told him. "You're chasing an El Dorado, hunting down a fable."

"They found it once before," Fullerton argued stubbornly. "It's all there in the records."

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"So was the Gilded Man. And the Empire of Prester John. Atlantis and all the rest of it. So was the old Northwest Passage back on ancient Earth. So were the Seven Cities. But nobody ever found any of those places because they weren't there."

He sat with the lamplight in his face and he had that wild look in his eyes and his hands were knotting into fists, then straightening out again.

"Sutter," he said unhappily, "I don't know why you do this — this mocking of yours. Somewhere in this universe there is immortality. Somewhere, somehow, it has been accomplished. And the human race must find it. We have the space for it now— all the space there is—millions of planets and eventually other galaxies. We don't have to keep making room for new generations, the way we would if we were stuck on a single world or a single solar system. Immortality, I tell you, is the next step for humanity!"

"Forget it," I said curtly, but once a Double Eye gets going, you can't shut him up.

"Look at this planet," he said. "An almost perfect Earth-type planet. Main-sequence sun. Good soil, good climate, plenty of water — an ideal place for a colony. How many years, do you think, before Man will settle here?"

"A thousand. Five thousand. Maybe more."

"That's right. And there are countless other planets like it, planets crying to be settled. But we won't settle them, because we keep dying off. And that's not all of it . . ."

PATIENTLY, I listened to all the rest — the terrible waste of dying — and I knew every bit of it by heart. Before Fullerton, we'd been saddled by one Double Eye fanatic and, before him, yet another. It was regulation. Every planet-checking team, no matter what its purpose or its destination, was required to carry as supercargo an agent of Immortality Institute.

But this kid seemed just a little worse than the usual run of them. It was his first trip out and he was all steamed up with idealism. In all of them, though, burned the same intense dedication to the proposition that Man must live forever and an equally unyielding belief that immortality could and would be found. For had not a lost spaceship found the answer centuries before — an unnamed spaceship on an unknown planet in a long-forgotten year!

It was a myth, of course. It had all the hallmarks of one and all the fierce loyalty that a myth can muster. It was kept alive by Im-

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mortality Institute, operating under a government grant and billions of bequests and gifts from hopeful rich and poor — all of whom, of course, had died or would die in spite of their generosity.

"What are you looking for?" I asked Fullerton, just a little wearily, for I was bored with it. "A plant? An animal? A people?"

And he replied, solemn as a judge: "That's something I can't tell you."

As if I gave a damn!

But I went on needling him. Maybe it was just something to while away my time. That and the fact that I disliked the fellow. Fanatics annoy me. They won't get off your ear.

"Would you know it if you found it?"

He didn't answer that one, but he turned haunted eyes on me.

I cut out the needling. Any more of it and I'd have had him bawling.

We sat around a while longer, but we did no talking.

He fished a toothpick out of his pocket and put it in his mouth and rolled it around, chewing at it moodily. I would have liked to reach out and slug him, for he chewed toothpicks all the time and it was an irritating habit that set me unreasonably on edge. I guess I was jumpy, too.

Finally he spit out the mangled toothpick and slouched off to bed.

I sat alone, looking up at the ship, and the lantern light was just bright enough for me to make out the legend lettered on it: *Caph VII —Ag Survey* 286, which was enough to identify us anywhere in the Galaxy.

For everyone knew Caph VII, the agricultural experimental planet, just as they would have known Aldebaran XII, the medical research planet, or Capella IX, the university planet, or any of the other special departmental planets.

CAPH VII is a massive operation and the hundreds of survey teams like us were just a part of it. But we were the spearheads who went out to new worlds, some of them uncharted, some just barely charted, looking for plants and animals that might be developed on the experimental tracts.

Not that our team had found a great deal. We had discovered some grasses that did well on one of the Eltanian worlds, but by and large we hadn't done anything that could be called distinguished. Our luck just seemed to run bad — like that Hamal poison ivy business. We worked as hard as any of the rest of them, but a lot of good that did.

Sometimes it was tough to take

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— when all the other teams brought in stuff that got them written up and earned them bonuses, while we came creeping in with a few piddling grasses or maybe not a thing at all.

It's a tough life and don't let anyone tell you different. Some of the planets turn out to be a fairly rugged business. At times, the boys come back pretty much the worse for wear and there are times when they don't come back at all.

But right now it looked as though we'd hit it lucky — a peaceful planet, good climate, easy terrain, no hostile inhabitants and no dangerous fauna.

Weber took his time relieving me at guard, but finally he showed up.

I could see he still was goggle-eyed about the critter. He walked around it several times, looking it over.

"That's the most fantastic case of symbiosis I have ever seen," he said. "If it weren't lying over there, I'd say it was impossible. Usually you associate symbiosis with the lower, more simple forms of life."

"You mean that brush growing out of it?"

He nodded.

"And the bees?"

He gagged over the bees.

"How are you so sure it's symbiosis?"

He almost wrung his hands. "I *don't* know," he admitted.

I GAVE him the rifle and went to the tent I shared with Kemper. The bacteriologist was awake when I came in.

"That you, Bob?"

"It's me. Everything's all right."

"I've been lying here and thinking," he said. "This is a screwy place."

"The critters?"

"No, not the critters. The planet itself. Never saw one like it. It's positively naked. No trees. No flowers. Nothing. It's just a sea of grass."

"Why not?" I asked. "Where does it say you can't find a pasture planet?"

"It's too simple," he protested. "Too simplified. Too neat and packaged. Almost as if someone had said let's make a simple planet, let's cut out all the frills, let's skip all the biological experiments and get right down to basics. Just one form of life and the grass for it to eat."

"You're way out on a limb," I told him. "How do you know all this? There may be other lifeforms. There may be complexities we can't suspect. Sure, all we've seen are the critters, but maybe that's because there are so many of them."

"To hell with you," he said and turned over on his cot.

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Now there's a guy I liked. We'd been tent partners ever since he'd joined the team better than ten years before and we got along fine.

Often I had wished the rest could get along as well. But it was too much to expect.

The fighting started right after breakfast, when Oliver and Weber insisted on using the camp table for dissecting. Parsons, who doubled as cook, jumped straight down their throats. Why he did it, I don't know. He knew before he said a word that he was licked, hands down. The same thing had happened many times before and he knew, no matter what he did or said, they would use the table.

But he put up a good battle. "You guys go and find some other place to do your butchering! Who wants to eat on a table that's all slopped up?"

"But, Carl, where can we do it? We'll use only one end of the table."

Which was a laugh, because in half an hour they'd be sprawled all over it.

"Spread out a canvas," Parsons snapped back.

"You can't dissect on a canvas. You got to have—"

"Another thing. How long do you figure it will take? In a day or two, that critter is going to get ripe."

It went on like that for quite a while, but by the time I started up the ladder to get the animals, Oliver and Weber had flung the critter on the table and were at work on it.

UNSHIPPING the animals is something not exactly in my line of duty, but over the years I'd taken on the job of getting them unloaded, so they'd be there and waiting when Weber or some of the others needed them to run off a batch of tests.

I went down into the compartment where we kept them in their cages. The rats started squeaking at me and the zartyls from Centauri started screeching at me and the punkins from Polaris made an unholy racket, because the punkins are hungry all the time. You just can't give them enough to eat. Turn them loose with food and they'd eat themselves to death.

It was quite a job to get them all lugged up to the port and to rig up a sling and lower them to the ground, but I finally finished it without busting a single cage. That was an accomplishment. Usually I smashed a cage or two and some of the animals escaped and then Weber would froth around for days about my carelessness.

I had the cages all set out in rows and was puttering with canvas flies to protect them from

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the weather when Kemper came along and stood watching me.

"I have been wandering around," he announced. From the way he said it, I could see he had the wind up.

But I didn't ask him, for then he'd never have told me. You had to wait for Kemper to make up his mind to talk.

"Peaceful place," I said and it was all of that. It was a bright, clear day and the sun was not too warm. There was a little breeze and you could see a long way off. And it was quiet. Really quiet. There wasn't any noise at all.

"It's a lonesome place," said Kemper.

"I don't get you," I answered patiently.

"Remember what I said last night? About this planet being too simplified?"

He stood watching me put up the canvas, as if he might be considering how much more to tell me. I waited.

Finally, he blurted it. "Bob, there are no insects!"

"What have insects—"

"You know what I mean," he said. "You go out on Earth or any Earthlike planet and lie down in the grass and watch. You'll see the insects. Some of them on the ground and others on the grass. There'll be all kinds of them."

"And there aren't any here?"

He shook his head. "None that I could see. I wandered around and lay down and looked in a dozen different places. Stands to reason a man should find some insects if he looked all morning. It isn't natural, Bob."

I KEPT on with my canvas and I don't know why it was, but I got a little chilled about there not being any insects. Not that I care a hoot for insects, but as Kemper said, it was unnatural, although you come to expect the so-called unnatural in this planet-checking business.

"There are the bees," I said.

"What bees?"

"The ones that are in the critters. Didn't you see any?"

"None," he said. "I didn't get close to any critter herds. Maybe the bees don't travel very far."

"Any birds?"

"I didn't see a one," he said. "But I was wrong about the flowers. The grass has tiny flowers."

"For the bees to work on."

Kemper's face went stony. "That's right. Don't you see the pattern of it, the planned—"

"I see it," I told him.

He helped me with the canvas and we didn't say much more. When we had it done, we walked into camp.

Parsons was cooking lunch and grumbling at Oliver and Weber,

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but they weren't paying much attention to him. They had the table littered with different parts they'd carved out of the critter and they were looking slightly numb.

"No brain," Weber said to us accusingly, as if we might have made off with it when he wasn't looking. "We can't find a brain and there's no nervous system."

"It's impossible," declared Oliver. "How can a highly organized, complex animal exist without a brain or nervous system?"

"Look at that butcher shop!" Parsons yelled wrathfully from the stove. "You guys will have to eat standing up!"

"Butcher shop is right," Weber agreed. "As near as we can figure out, there are at least a dozen different kinds of flesh — some fish, some fowl, some good red meat. Maybe a little lizard, even."

"An all-purpose animal," said Kemper. "Maybe we found something finally."

"If it's edible," Oliver added. "If it doesn't poison you. If it doesn't grow hair all over you."

"That's up to you," I told him. "I got the cages down and all lined up. You can start killing off the little cusses to your heart's content."

Weber looked ruefully at the mess on the table.

"We did just a rough exploratory job," he explained. "We ought to start another one from scratch. You'll have to get in on that next one, Kemper."

Kemper nodded glumly.

Weber looked at me. "Think you can get us one?"

"Sure," I said. "No trouble."

It wasn't.

Right after lunch, a lone critter came walking up, as if to visit us. It stopped about six feet from where we sat, gazed at us soulfully, then obligingly dropped dead.

DURING the next few days, Oliver and Weber barely took time out to eat and sleep. They sliced and probed. They couldn't believe half the things they found. They argued. They waved their scalpels in the air to emphasize their anguish. They almost broke down and wept. Kemper filled box after box with slides and sat hunched, half petrified, above his microscope.

Parsons and I wandered around while the others worked. He dug up some soil samples and tried to classify the grasses and failed, because there weren't any grasses — there was just one type of grass. He made notes on the weather and ran an analysis of the air and tried to pull together an ecological report without a lot to go on.

I looked for insects and I didn't find any except the bees and I

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never saw those unless I was near a critter herd. I watched for birds and there were none. I spent two days investigating a creek, lying on my belly and staring down into the water, and there were no signs of life. I hunted up a sugar sack and put a hoop in the mouth of it and spent another two days seining. I didn't catch a thing — not a fish, not even a crawdad, not a single thing.

By that time, I was ready to admit that Kemper had guessed right.

Fullerton walked around, too, but we paid no attention to him. All the Double Eyes, every one of them, always were looking for something no one else could see. After a while, you got pretty tired of them. I'd spent twenty years getting tired of them.

The last day I went seining, Fullerton stumbled onto me late in the afternoon. He stood up on the bank and watched me working in a pool. When I looked up, I had the feeling he'd been watching me for quite a little while.

"There's nothing there," he said.

The way he said it, he made it sound as if he'd known all along there was nothing there and that I was a fool for looking.

But that wasn't the only reason I got sore.

Sticking out of his face, instead of the usual toothpick, was a stem of grass and he was rolling it around in his lips and chewing it the way he chewed the toothpicks.

"Spit out that grass!" I shouted at him. "You fool, spit it out!"

HIS eyes grew startled and he spit out the grass.

"It's hard to remember," he mumbled. "You see, it's my first trip out and—"

"It could be your last one, too," I told him brutally. "Ask Weber sometime, when you have a moment, what happened to the guy who pulled a leaf and chewed it. Absent-minded, sure. Habit, certainly. He was just as dead as if he'd committed suicide."

Fullerton stiffened up.

"I'll keep it in mind," he said.

I stood there, looking up at him, feeling a little sorry that I'd been so tough with him.

But I had to be. There were so many absent-minded, well-intentioned ways a man could kill himself.

"You find anything?" I asked.

"I've been watching the critters," he said. "There was something funny that I couldn't quite make out at first . . ."

"I can list you a hundred funny things."

"That's not what I mean, Sutter. Not the patchwork color or the bushes growing out of them. There was something else. I fi-

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nally got it figured out. *There aren't any young.*"

Fullerton was right, of course. I realized it now, after he had told me. There weren't any calves or whatever you might call them. All we'd seen were adults. And yet that didn't necessarily mean there *weren't* any calves. It just meant we hadn't seen them. And the same, I knew, applied as well to insects, birds and fish. They all might be on the planet, but we just hadn't managed to find them yet.

And then, belatedly, I got it—the inference, the hope, the half-crazy fantasy behind this thing that Fullerton had found, or imagined he'd found.

"You're downright loopy," I said flatly.

He stared back at me and his eyes were shining like a kid's at Christmas.

He said: "It had to happen sometime, Sutter, somewhere."

I climbed up the bank and stood beside him. I looked at the net I still held in my hands and threw it back into the creek and watched it sink.

"Be sensible," I warned him. "You have no evidence. Immortality wouldn't work that way. It couldn't. That way, it would be nothing but a dead end. Don't mention it to anyone. They'd ride you without mercy all the way back home."

I DON'T know why I wasted time on him. He stared back at me stubbornly, but still with that awful light of hope and triumph on his face.

"I'll keep my mouth shut," I told him curtly. "I won't say a word."

"Thanks, Sutter," he answered. "I appreciate it a lot."

I knew from the way he said it that he could murder me with gusto.

We trudged back to camp.

The camp was all slicked up.

The dissecting mess had been cleared away and the table had been scrubbed so hard that it gleamed. Parsons was cooking supper and singing one of his obscene ditties. The other three sat around in their camp chairs and they had broken out some liquor and were human once again.

"All buttoned up?" I asked, but Oliver shook his head.

They poured a drink for Fullerton and he accepted it, a bit ungraciously, but he did take it. That was some improvement on the usual Double Eye.

They didn't offer me any. They knew I couldn't drink it.

"What have we got?" I asked.

"It could be something good," said Oliver. "It's a walking menu. It's an all-purpose animal, for sure. It lays eggs, gives milk, makes honey. It has six different kinds of red meat, two of fowl,

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one of fish and a couple of others we can't identify."

"Lays eggs," I said. "Gives milk. Then it reproduces."

"Certainly," said Weber. "What did you think?"

"There aren't any young."

Weber grunted. "Could be they have nursery areas. Certain places instinctively set aside in which to rear their young."

"Or they might have instinctive birth control," suggested Oliver. "That would fit in with the perfectly balanced ecology Kemper talks about."

Weber snorted. "Ridiculous!"

"Not so ridiculous," Kemper retorted. "Not half so ridiculous as some other things we found. Not one-tenth as ridiculous as no brain or nervous system. Not any more ridiculous than my bacteria."

"Your bacteria!" Weber said. He drank down half a glass of liquor in a single gulp to make his disdain emphatic.

"The critters swarm with them," Kemper went on. "You find them everywhere throughout the entire animal. Not just in the bloodstream, not in restricted areas, but in the entire organism. And all of them the same. Normally it takes a hundred different kinds of bacteria to make a metabolism work, but here there's only one. And that one, by definition, must be general purpose—it must do all the work that the hundred other species do."

He grinned at Weber. "I wouldn't doubt but right there are your brains and nervous systems—the bacteria doubling in brass for both systems."

PARSONS came over from the stove and stood with his fists planted on his hips, a steak fork grasped in one hand and sticking out at a tangent from his body.

"If you ask me," he announced, "there ain't no such animal. The critters are all wrong. They can't be made that way."

"But they are," said Kemper.

"It doesn't make sense! One kind of life. One kind of grass for it to eat. I'll bet that if we could make a census, we'd find the critter population is at exact capacity — just so many of them to the acre, figured down precisely to the last mouthful of grass. Just enough for them to eat and no more. Just enough so the grass won't be overgrazed. Or undergrazed, for that matter."

"What's wrong with that?" I asked, just to needle him.

I thought for a minute he'd take the steak fork to me.

"What's *wrong* with it?" he thundered. "Nature's never static, never standing still. But here it's standing still. Where's the competition? Where's the evolution?"

"That's not the point," said Kemper quietly. "The fact is that

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that's the way it is. The point is *why*? How did it happen? How was it planned? *Why* was it planned?"

"Nothing's planned," Weber told him sourly. "You know better than to talk like that."

Parsons went back to his cooking. Fullerton had wandered off somewhere. Maybe he was discouraged from hearing about the eggs and milk.

For a time, the four of us just sat.

Finally Weber said: "The first night we were here, I came out to relieve Bob at guard and I said to him . . ."

He looked at me. "You remember, Bob?"

"Sure. You said symbiosis."

"And now?" asked Kemper.

"I don't know. It simply couldn't happen. But if I did—if it *could* — this critter would be the most beautifully logical example of symbiosis you could dream up. Symbiosis carried to its logical conclusion. Like, long ago, all the life-forms said let's quit this feuding, let's get together, let's cooperate. All the plants and animals and fish and bacteria got together—"

"It's far-fetched, of course," said Kemper. "But, by and large, it's not anything unheard of, merely carried further, that's all. Symbiosis is a recognized way of life and there's nothing—"

Parsons let out a bellow for them to come and get it, and I went to my tent and broke out my diet kit and mixed up a mess of goo. It was a relief to eat in private, without the others making cracks about the stuff I had to choke down.

I FOUND a thin sheaf of working notes on the small wooden crate I'd set up for a desk. I thumbed through them while I ate. They were fairly sketchy and sometimes hard to read, being smeared with blood and other gook from the dissecting table. But I was used to that. I worked with notes like that all the blessed time. So I was able to decipher them.

The whole picture wasn't there, of course, but there was enough to bear out what they'd told me and a good deal more as well.

For examples, the color squares that gave the critters their crazy-quiltish look were separate kinds of meat or fish or fowl or unknown food, whatever it might be. Almost as if each square was the present-day survivor of each ancient symbiont — if, in fact, there was any basis to this talk of symbiosis.

The egg-laying apparatus was described in some biologic detail, but there seemed to be no evidence of recent egg production. The same was true of the lactation system.

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There were, the notes said in Oliver's crabbed writing, five kinds of fruit and three kinds of vegetables to be derived from the plants growing from the critters.

I shoved the notes to one side and sat back on my chair, gloating just a little.

Here was diversified farming with a vengeance! You had meat and dairy herds, fish pond, aviary, poultry yard, orchard and garden rolled into one, all in the body of a single animal that was a complete farm in itself!

I went through the notes hurriedly again and found what I was looking for. The food product seemed high in relation to the gross weight of the animal. Very little would be lost in dressing out.

That is the kind of thing an ag economist has to consider. But that isn't all of it, by any means. What if a man couldn't eat the critter? Suppose the critters couldn't be moved off the planet because they died if you took them from their range?

I recalled how they'd just walked up and died; that in itself was another headache to be filed for future worry.

What if they could only eat the grass that grew on this one planet? And if so, could the grass be grown elsewhere? What kind of tolerance would the critter show to different kinds of climate? What was the rate of reproduction? If it was slow, as was indicated, could it be stepped up? What was the rate of growth?

I got up and walked out of the tent and stood for a while, outside. The little breeze that had been blowing had died down at sunset and the place was quiet. Quiet because there was nothing but the critters to make any noise and we had yet to hear them make a single sound. The stars blazed overhead and there were so many of them that they lighted up the countryside as if there were a moon.

I walked over to where the rest of the men were sitting.

"It looks like we'll be here for a while," I said. "Tomorrow we might as well get the ship unloaded."

NO ONE answered me, but in the silence I could sense the half-hidden satisfaction and the triumph. At last we'd hit the jackpot! We'd be going home with something that would make those other teams look pallid. *We'd* be the ones who got the notices and bonuses.

Oliver finally broke the silence. "Some of our animals aren't in good shape. I went down this afternoon to have a look at them. A couple of the pigs and several of the rats."

He looked at me accusingly.

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I flared up at him. "Don't look at me! I'm not their keeper. I just take care of them until you're ready to use them."

Kemper butted in to head off an argument. "Before we do any feeding, we'll need another critter."

"I'll lay you a bet," said Weber.

Kemper didn't take him up.

It was just as well he didn't, for a critter came in, right after breakfast, and died with a *savoir faire* that was positively marvelous. They went to work on it immediately.

Parsons and I started unloading the supplies. We put in a busy day. We moved all the food except the emergency rations we left in the ship. We slung down a refrigerating unit Weber had been yelling for, to keep the critter products fresh. We unloaded a lot of equipment and some silly odds and ends that I knew we'd have no use for, but that some of the others wanted broken out. We put up tents and we lugged and pushed and hauled all day. Late in the afternoon, we had it all stacked up and under canvas and were completely bushed.

Kemper went back to his bacteria. Weber spent hours with the animals. Oliver dug up a bunch of grass and gave the grass the works. Parsons went out on field trips, mumbling and fretting.

Of all of us, Parsons had the job that was most infuriating. Ordinarily the ecology of even the simplest of planets is a complicated business and there's a lot of work to do. But here was almost nothing. There was no competition for survival. There was no dog eat dog. There were just critters cropping grass.

I started to pull my report together, knowing that it would have to be revised and rewritten again and again. But I was anxious to get going. I fairly itched to see the pieces fall together—although I knew from the very start some of them wouldn't fit. They almost never do.

Things went well. Too well, it sometimes seemed to me.

There were incidents, of course, like when the punkins somehow chewed their way out of their cage and disappeared.

Weber was almost beside himself.

"They'll come back," said Kemper. "With that appetite of theirs, they won't stay away for long."

AND he was right about that part of it. The punkins were the hungriest creatures in the Galaxy. You could never feed them enough to satisfy them. And they'd eat anything. It made no difference to them, just so there was a lot of it.

And it was that very factor in their metabolism that made them

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invaluable as research animals.

The other animals thrived on the critter diet. The carnivorous ones ate the critter-meat and the vegetarians chomped on critter-fruit and critter-vegetables. They all grew sleek and sassy. They seemed in better health than the control animals, which continued their regular diet. Even the pigs and rats that had been sick got well again and as fat and happy as any of the others.

Kemper told us, "This critter stuff is more than just a food. It's a medicine. I can see the signs: 'Eat Critter and Keep Well!'"

Weber grunted at him. He was never one for joking and I think he was a worried man. A thorough man, he'd found too many things that violated all the tenets he'd accepted as the truth. No brain or nervous system. The ability to die at will. The lingering hint of wholesale symbiosis. And the bacteria.

The bacteria, I think, must have seemed to him the worst of all.

There was, it now appeared, only one type involved. Kemper had hunted frantically and had discovered no others. Oliver found it in the grass. Parsons found it in the soil and water. The air, strangely enough, seemed to be free of it.

But Weber wasn't the only one who worried. Kemper worried, too. He unloaded most of it just before our bedtime, sitting on the edge of his cot and trying to talk the worry out of himself while I worked on my reports.

And he'd picked the craziest point imaginable to pin his worry on.

"YOU can explain it all," he said, "if you are only willing to concede on certain points. You can explain the critters if you're willing to believe in a symbiotic arrangement carried out on a planetary basis. You can believe in the utter simplicity of the ecology if you're willing to assume that, given space and time enough, anything can happen within the bounds of logic.

"You can visualize how the bacteria might take the place of brains and nervous systems if you're ready to say this is a bacterial world and not a critter world. And you can even envision the bacteria — all of them, every single one of them — as forming one gigantic linked intelligence. And if you accept that theory, then the voluntary deaths become understandable, because there's no actual death involved — it's just like you or me trimming off a hangnail. And if this is true, then Fullerton has found immortality, although it's not the kind he was looking for and it won't do him or us a single bit of good.

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"But the thing that worries me," he went on, his face all knotted up with worry, "is the seeming lack of anything resembling a defense mechanism. Even assuming that the critters are no more than fronting for a bacterial world, the mechanism should be there as a simple matter of precaution. Every living thing we know of has some sort of way to defend itself or to escape potential enemies. It either fights or runs and hides to preserve its life."

He was right, of course. Not only did the critters have no defense, they even saved one the trouble of going out to kill them.

"Maybe we are wrong," Kemper concluded. "Maybe life, after all, is not as valuable as we think it is. Maybe it's not a thing to cling to. Maybe it's not worth fighting for. Maybe the critters, in their dying, are closer to the truth than we."

It would go on like that, night after night, with Kemper talking around in circles and never getting anywhere. I think most of the time he wasn't talking to me, but talking to himself, trying by the very process of putting it in words to work out some final answer.

And long after we had turned out the lights and gone to bed, I'd lie on my cot and think about all that Kemper said and I thought in circles, too. I wondered why all the critters that came in and died were in the prime of life. Was the dying a privilege that was accorded only to the fit? Or were all the critters in the prime of life? Was there really some cause to believe they might be immortal?

I asked a lot of questions, but there weren't any answers.

We continued with our work. Weber killed some of his animals and examined them and there were no signs of ill effect from the critter diet. There were traces of critter bacteria in their blood, but no sickness, reaction or antibody formation. Kemper kept on with his bacterial work. Oliver started a whole series of experiments with the grass. Parsons just gave up.

The punkins didn't come back and Parsons and Fullerton went out and hunted for them, but without success.

I WORKED on my report and the pieces fell together better than I had hoped they would.

It began to look as though we had the situation well nailed down.

We all were feeling pretty good. We could almost taste that bonus.

But I think that, in the back of our minds, all of us were wondering if we could get away scot free. I know I had mental fingers crossed. It just didn't seem quite

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possible that something wouldn't happen.

And, of course, it did.

We were sitting around after supper, with the lantern lighted, when we heard the sound. I realized afterward that we had been hearing it for some time before we paid attention to it. It started so soft and so far away that it crept upon us without alarming us. At first, it sounded like a sighing, as if a gentle wind were blowing through a little tree, and then it changed into a rumble, but a far-off rumble that had no menace in it. I was just getting ready to say something about thunder and wondering if our stretch of weather was about to break when Kemper jumped up and yelled.

I don't know what he yelled. Maybe it wasn't a word at all. But the way he yelled brought us to our feet and sent us at a dead run for the safety of the ship. Even before we got there, in the few seconds it took to reach the ladder, the character of the sound had changed and there was no mistaking what it was — the drumming of hoofs heading straight for camp.

They were almost on top of us when we reached the ladder and there wasn't time or room for all of use to use it. I was the last in line and I saw I'd never make it and a dozen possible escape plans flickered through my mind. But I knew they wouldn't work fast enough. Then I saw the rope, hanging where I'd left it after the unloading job, and I made a jump for it. I'm no rope-climbing expert, but I shinnied up it with plenty of speed. And right behind me came Weber, who was no rope-climber, either, but who was doing rather well.

I thought of how lucky it had been that I hadn't found the time to take down the rig and how Weber had ridden me unmercifully about not doing it. I wanted to shout down and point it out to him, but I didn't have the breath.

We reached the port and tumbled into it. Below us, the stampeding critters went grinding through the camp. There seemed to be millions of them. One of the terrifying things about it was how silently they ran. They made no outcry of any kind; all you could hear was the sound of their hoofs pounding on the ground. It seemed almost as if they ran in some blind fury that was too deep for outcry.

THEY spread for miles, as far as one could see on the starlit plains, but the spaceship divided them and they flowed to either side of it and then flowed back again, and beyond the spaceship there was a little sector that they never touched. I thought

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how we could have been safe staying on the ground and huddling in that sector, but that's one of the things a man never can foresee.

The stampede lasted for almost an hour. When it was all over, we came down and surveyed the damage. The animals in their cages, lined up between the ship and the camp, were safe. All but one of the sleeping tents were standing. The lantern still burned brightly on the table. But everything else was gone. Our food supply was trampled in the ground. Much of the equipment was lost and wrecked. On either side of the camp, the ground was churned up like a half-plowed field. The whole thing was a mess.

It looked as if we were licked.

The tent Kemper and I used for sleeping still stood, so our notes were safe. The animals were all right. But that was all we had —the notes and animals.

"I need three more weeks," said Weber. "Give me just three weeks to complete the tests."

"We haven't got three weeks," I answered. "All our food is gone."

"The emergency rations in the ship?"

"That's for going home."

"We can go a little hungry."

He glared at us — at each of us in turn — challenging us to do a little starving.

"I can go three weeks," he said, "without any food at all."

"We could eat critter," suggested Parsons. "We could take a chance."

Weber shook his head. "Not yet. In three weeks, when the tests are finished, then maybe we will know. Maybe we won't need those rations for going home. Maybe we can stock up on critters and eat our heads off all the way to Caph."

I looked around at the rest of them, but I knew, before I looked, the answer I would get.

"All right," I said. "We'll try it."

"It's all right for you," Fullerton retorted hastily. "You have your diet kit."

Parsons reached out and grabbed him and shook him so hard that he went cross-eyed. "We don't talk like that about those diet kits."

Then Parsons let him go.

WE SET up double guards, for the stampede had wrecked our warning system, but none of us got much sleep. We were too upset.

Personally, I did some worrying about why the critters had stampeded. There was nothing on the planet that could scare them. There were no other animals. There was no thunder or lightning — as a matter of fact, it appeared that the planet might have

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no boisterous weather ever. And there seemed to be nothing in the critter makeup, from our observation of them, that would set them off emotionally.

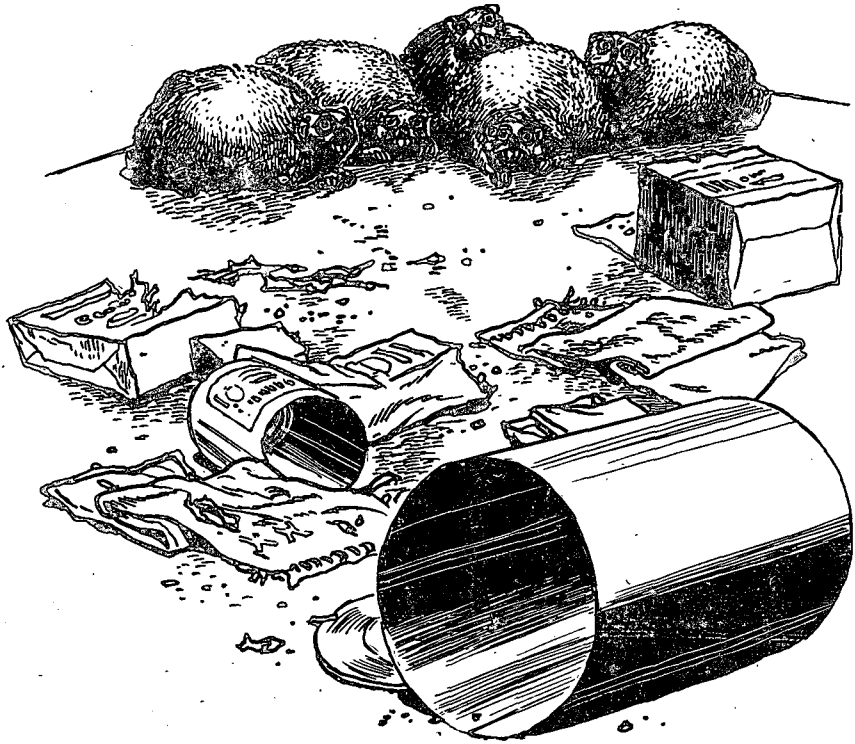
But there must be a reason and a purpose, I told myself. And there must be, too, in their dropping dead for us. But was the purpose intelligence or instinct?

That was what bothered me most. It kept me awake all night long.

At daybreak, a critter walked in and died for us happily.

We went without our breakfast and, when noon came, no one said anything about lunch, so we skipped that, too.

Late in the afternoon, I climbed the ladder to get some food for supper. There wasn't any. Instead, I found five of the fattest punkins you ever laid your eyes on. They had chewed holes through the packing boxes and



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the food was cleaned out. The sacks were limp and empty. They'd even managed to get the lid off the coffee can somehow and had eaten every bean.

The five of them sat contentedly in a corner, blinking smugly at me. They didn't make a racket, as they usually did. Maybe they knew they were in the wrong or maybe they were just too full. For once, perhaps, they'd gotten all they could eat.

I just stood there and looked at them and I knew how they'd gotten on the ship. I blamed myself, not them. If only I'd found the time to take down the unloading rig, they'd never gotten in. But then I remembered how that dangling rope had saved my life and Weber's and I couldn't decide whether I'd done right or wrong.

I went over to the corner and picked the punkins up. I stuffed three of them in my pockets and carried the other two. I climbed down from the ship and walked up to camp. I put the punkins on the table.

"Here they are," I said. "They were in the ship. That's why we couldn't find them. They climbed up the rope."

Weber took one look at them. "They look well fed. Did they leave anything?"

"Not a scrap. They cleaned us out entirely."

The punkins were quite happy. It was apparent they were glad to be back with us again. After all, they'd eaten everything in reach and there was no further reason for their staying in the ship.

PARSONS picked up a knife and walked over to the critter that had died that morning.

"Tie on your bibs," he said.

He carved out big steaks and threw them on the table and then he lit his stove. I retreated to my tent as soon as he started cooking, for never in my life have I smelled anything as good as those critter steaks.

I broke out the kit and mixed me up some goo and sat there eating it, feeling sorry for myself.

Kemper came in after a while and sat down on his cot.

"Do you want to hear?" he asked me.

"Go ahead," I invited him resignedly.

"It's wonderful. It's got everything you've ever eaten backed clear off the table. We had three different kinds of red meat and a slab of fish and something that resembled lobster, only better. And there's one kind of fruit growing out of that bush in the middle of the back . . ."

"And tomorrow you drop dead."

"I don't think so," Kemper said.

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"The animals have been thriving on it. There's nothing wrong with them."

It seemed that Kemper was right. Between the animals and men, it took a critter a day. The critters didn't seem to mind. They were johnny-on-the-spot. They walked in promptly, one at a time, and keeled over every morning.

The way the men and animals ate was positively indecent. Parsons cooked great platters of different kinds of meat and fish and fowl and what-not. He prepared huge bowls of vegetables. He heaped other bowls with fruit. He racked up combs of honey and the men licked the platters clean. They sat around with belts unloosened and patted their bulging bellies and were disgustingly contented.

I waited for them to break out in a rash or to start turning green with purple spots or grow scales or something of the sort. But nothing happened. They thrived, just as the animals were thriving. They felt better than they ever had.

Then, one morning, Fullerton turned up sick. He lay on his cot flushed with fever. It looked like Centaurian virus, although we'd been inoculated against that. In fact, we'd been inoculated and immunized against almost everything. Each time, before we blasted off on another survey, they jabbed us full of booster shots.

I didn't think much of it. I was fairly well convinced, for a time at least, that all that was wrong with him was overeating.

OLIVER, who knew a little about medicine, but not much, got the medicine chest out of the ship and pumped Fullerton full of some new antibiotic that came highly recommended for almost everything.

We went on with our work, expecting he'd be on his feet in a day or two.

But he wasn't. If anything, he got worse.

Oliver went through the medicine chest, reading all the labels carefully, but didn't find anything that seemed to be the proper medication. He read the first-aid booklet. It didn't tell him anything except how to set broken legs or apply artificial respiration and simple things like that.

Kemper had been doing a lot of worrying, so he had Oliver take a sample of Fullerton's blood and then prepared a slide. When he looked at the blood through the microscope, he found that it swarmed with bacteria from the critters. Oliver took some more blood samples and Kemper prepared more slides, just to double-check, and there was no doubt about it.

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By this time, all of us were standing around the table watching Kemper and waiting for the verdict. I know the same thing must have been in the mind of each of us.

It was Oliver who put it into words. "Who is next?" he asked.

Parsons stepped up and Oliver took the sample.

We waited anxiously.

Finally Kemper straightened

"You have them, too," he said to Parsons. "Not as high a count as Fullerton."

Man after man stepped up. All of us had the bacteria, but in my case the count was low.

"It's the critter," Parsons said. "Bob hasn't been eating any."

"But cooking kills—" Oliver started to say.

"You can't be sure. These bacteria would have to be highly adaptable. They do the work of thousands of other micro-organisms. They're a sort of handyman, a jack-of-all-trades. They can acclimatize. They can meet new situations. They haven't weakened the strain by becoming specialized."

"Besides," said Parsons, "we don't cook all of it. We don't cook the fruit and most of you guys raise hell if a steak is more than singed."

"What I can't figure out is why it should be Fullerton," Weber said. "Why should his count be higher? He started on the critter the same time as the rest of us."

I remembered that day down by the creek.

"He got a head start on the rest of you," I explained. "He ran out of toothpicks and took to chewing grass stems. I caught him at it."

I KNOW it wasn't very comforting. It meant that in another week or two, all of them would have as high a count as Fullerton. But there was no sense not telling them. It would have been criminal not to. There was no place for wishful thinking in a situation like that.

"We can't stop eating critter," said Weber. "It's all the food we have. There's nothing we can do."

"I have a hunch," Kemper replied, "it's too late anyhow."

"If we started home right now," I said, "there's my diet kit . . ."

They didn't let me finish making my offer. They slapped me on the back and pounded one another and laughed like mad.

It wasn't that funny. They just needed something they could laugh at.

"It wouldn't do any good," said Kemper. "We've already had it. Anyhow, your diet kit wouldn't last us all the way back home."

"We could have a try at it," I argued.

"It may be just a transitory

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thing," Parsons said. "Just a bit of fever. A little upset from a change of diet."

We all hoped that, of course.

But Fullerton got no better.

Weber took blood samples of the animals and they had a bacterial count almost as high as Fullerton's — much higher than when he'd taken it before.

Weber blamed himself. "I should have kept closer check. I should have taken tests every day or so."

"What difference would it have made?" demanded Parsons. "Even if you had, even if you'd found a lot of bacteria in the blood, we'd still have eaten critter. There was no other choice."

"Maybe it's not the bacteria," said Oliver. "We may be jumping at conclusions. It may be something else that Fullerton picked up."

Weber brightened up a bit. "That's right. The animals still seem to be okay."

They were bright and chipper, in the best of health.

We waited. Fullerton got neither worse nor better.

Then, one night, he disappeared.

Oliver, who had been sitting with him, had dozed off for a moment. Parsons, on guard, had heard nothing.

We hunted for him for three full days. He couldn't have gone far, we figured. He had wandered off in a delirium and he didn't have the strength to cover any distance.

But we didn't find him.

WE DID find one queer thing, however. It was a ball of some strange substance, white and fresh-appearing. It was about four feet in diameter. It lay at the bottom of a little gully, hidden out of sight, as if someone or something might have brought it there and hidden it away.

We did some cautious poking at it and we rolled it back and forth a little and wondered what it was, but we were hunting Fullerton and we didn't have the time to do much investigating. Later on, we agreed, we would come back and get it and find out what it was.

Then the animals came down with the fever, one after another — all except the controls, which had been eating regular food until the stampede had destroyed the supply. After that, of course, all of them ate critter.

By the end of two days, most of the animals were down.

Weber worked with them, scarcely taking time to rest. We all helped as best we could.

Blood samples showed a greater concentration of bacteria. Weber started a dissection, but never finished it. Once he got the

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animal open, he took a quick look at it and scraped the whole thing off the table into a pail. I saw him, but I don't think any of the others did. We were pretty busy.

I asked him about it later in the day, when we were alone for a moment. He briskly brushed me off.

I went to bed early that night because I had the second guard. It seemed I had no more than shut my eyes when I was brought upright by a racket that raised goose pimples on every inch of me.

I tumbled out of bed and scrabbled around to find my shoes and get them on. By that time, Kemper had dashed out of the tent.

There was trouble with the animals. They were fighting to break out, chewing the bars of their cages and throwing themselves against them in a blind and terrible frenzy. And all the time they were squealing and screaming. To listen to them set your teeth on edge.

Weber dashed around with a hypodermic. After what seemed hours, we had them full of sedative. A few of them broke loose and got away, but the rest were sleeping peacefully.

I got a gun and took over guard duty while the other men went back to bed.

I STAYED down near the cages, walking back and forth because I was too tense to do much sitting down. It seemed to me that between the animals' frenzy to escape and Fullerton's disappearance, there was a parallel that was too similar for comfort.

I tried to review all that had happened on the planet and I got bogged down time after time as I tried to make the picture dovetail. The trail of thought I followed kept turning back to Kemper's worry about the critters' lack of a defense mechanism.

Maybe, I told myself, they had a defense mechanism, after all — the slickest, smoothest, trickiest one Man ever had encountered.

As soon as the camp awoke, I went to our tent to stretch out for a moment, perhaps to catch a catnap. Worn out, I slept for hours.

Kemper woke me.

"Get up, Bob!" he said. "For the love of God, get up!"

It was late afternoon and the last rays of the sun were streaming through the tent flap. Kemper's face was haggard. It was as if he'd suddenly grown old since I'd seen him less than twelve hours before.

"They're encysting," he gasped. "They're turning into cocoons or chrysalises or . . ."

I sat up quickly. "That one we

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found out there in the field!"

He nodded.

"Fullerton?" I asked.

"We'll go out and see, all five of us, leaving the camp and animals alone."

We had some trouble finding it because the land was so flat and featureless that there were no landmarks.

But finally we located it, just as dusk was setting in.

The ball had split in two — not in a clean break, in a jagged one. It looked like an egg after a chicken has been hatched.

And the halves lay there in the gathering darkness, in the silence underneath the sudden glitter of the stars — a last farewell and a new beginning and a terrible alien fact.

I tried to say something, but my brain was so numb that I was not entirely sure just what I should say. Anyhow, the words died in the dryness of my mouth and the thickness of my tongue before I could get them out.

For it was not only the two halves of the cocoon — it was the marks within that hollow, the impression of what had been there, blurred and distorted by the marks of what it had become.

We fled back to camp.

SOMEONE, I think it was Oliver, got the lantern lighted. We stood uneasily, unable to look at one another, knowing that the time was past for all dissembling, that there was no use of glossing over or denying what we'd seen in the dim light in the gully.

"Bob is the only one who has a chance," Kemper finally said, speaking more concisely than seemed possible. "I think he should leave right now. Someone must get back to Caph. Someone has to tell them."

He looked across the circle of lantern light at me.

"Well," he said sharply, "get going! What's the matter with you?"

"You were right," I said, not much more than whispering. "Remember how you wondered about a defense mechanism?"

"They have it," Weber agreed. "The best you can find. There's no beating them. They don't fight you. They absorb you. They make you into them. No wonder there are just the critters here. No wonder the planet's ecology is simple. They have you pegged and measured from the instant you set foot on the planet. Take one drink of water. Chew a single grass stem. Take one bite of critter. Do any one of these things and they have you cold."

Oliver came out of the dark and walked across the lantern-lighted circle. He stopped in front of me.

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"Here are your diet kit and notes," he said.

"But I can't run out on you!"

"Forget us!" Parsons barked at me. "We aren't human any more. In a few more days . . ."

He grabbed the lantern and strode down the cages and held the lantern high, so that we could see.

"Look," he said.

There were no animals. There were just the cocoons and the little critters and the cocoons that had split in half.

I saw Kemper looking at me and there was, of all things, compassion on his face.

"You don't want to stay," he told me. "If you do, in a day or two, a critter will come in and drop dead for you. And you'll go crazy all the way back home — wondering which one of us it was."

HE TURNED away then. They all turned away from me and suddenly it seemed I was all alone.

Weber had found an axe somewhere and he started walking down the row of cages, knocking off the bars to let the little critters out.

I walked slowly over to the ship and stood at the foot of the ladder, holding the notes and the diet kit tight against my chest.

When I got there, I turned around and looked back at them and it seemed I couldn't leave them.

I thought of all we'd been through together and when I tried to think of specific things, the only thing I could think about was how they always kidded me about the diet kit.

And I thought of the times I had to leave and go off somewhere and eat alone so that I couldn't smell the food. I thought of almost ten years of eating that damn goo and that I could never eat like a normal human because of my ulcerated stomach.

Maybe *they* were the lucky ones, I told myself. If a man got turned into a critter, he'd probably come out with a whole stomach and never have to worry about how much or what he ate. The critters never ate anything except the grass, but maybe, I thought, that grass tasted just as good to them as a steak or a pumpkin pie would taste to me.

So I stood there for a while and I thought about it. Then I took the diet kit and flung it out into the darkness as far as I could throw it and I dropped the notes to the ground.

I walked back into the camp and the first man I saw was Parsons.

"What have you got for supper?" I asked him.

—CLIFFORD D. SIMAK

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I want the Galaxy to know . . . I did it, nobody else! And what was my reward? Just to get . . .

GYPPED

By LLOYD BIGGLE, JR.

IT ALL began ten years ago, when I was a sub-clerk in the Special Problems Section on Base VII. The Chief walked in one hot morning (all mornings are hot on Base VII) and tossed a letter at me.

"Here's a special problem to end all special problems," he said.

It was the expensively embossed stationery of the Galactic Commission, with an added fancy ornament that the Committee on Intercultural Relations had adopted. The Committee was requesting of Base VII all available information concerning musical culture in its sector.

"Let's see," I said. "There are the Golarifths on Willac. They rub their tentacles together during mating season. Humans can't hear it, but it's said to produce some pretty lively music. It that what they had in mind?"

"I wouldn't know," said the Chief.

"And the Arocambi on Mandus. Their noises faintly resemble the backfire of a commuter plane. How would that do?"

"It's your problem," he said,

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and he walked away laughing.

As a problem, it didn't amount to much. I'd had some really tough ones to handle. There was the time the Gistobs from Vernith were sending a trade commission to Earth. Base VII was requested to forward blueprints of a typical Gistob dwelling so a model community could be built for them to use. As if any idiot didn't know that no self-respecting Gistob would ever hang his hat anywhere but in a nice, creamy mudhole.

Then there was the time the Hollywood millionaires decided to double their fortunes by palming off their three-hundred-year-old films to the outlying planets. Some kind of primitive war picture was shown on Lamruth and the natives were enthralled. They didn't understand the picture, but they were captivated by the air raid sirens and they decided they wanted one. They bombarded Base VII with demands and threats until the thing was tossed into the lap of Special Problems.

I got tired of the whole business after a year or so and I told Engineering to make them one. Engineering went overboard on the project, as Engineering usually does. They delivered an amazing noisemaker that not only had a siren, but other gadgets that chirped and squeaked and honked and hissed.

The thing was installed in the capital city of Lamruth and, ever since, the natives have gathered from miles around once a week to hear the thing cut loose.

And then there was the problem of the natives on Emruck.

EMRUCK developed into quite a tourist attraction because of its miniature active volcanoes and its moving rock formations. But the natives are humans and they positively refused to wear clothing. The Galactic Commission was highly embarrassed by the situation and Special Problems was put to work on it. It took some doing, but eventually we got the natives dressed. The Galactic Commission wasn't happy about that, either. As soon as the natives started wearing clothing, the tourist trade practically dropped to zero.

And there was the time — but all this doesn't have anything to do with my invention.

The request for information on musical culture didn't faze me. In fact, I had a form letter for just such emergencies and I put it to work.

"The musical culture of this sector," I wrote, "is extremely complex and virtually impossible to describe. No data has been accumulated because no one attached to Base VII has the necessary specialized knowledge and

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equipment for such a project."

I sent the letter off and forgot about it.

Some ten months later, the Chief walked in with a shriveled, bewiskered specimen I certainly would have taken for a Nincolm if he hadn't been wearing clothing.

"This," said the Chief, "is Professor Wolfstammer."

"Professor Otto Wolfstammer," the Professor said.

"The Professor is a musicologist," said the Chief.

"A comparative musicologist," the Professor said.

"He has been sent out by the Galactic Commission to study music in this sector," said the Chief.

"To study musical culture in this sector," the Professor said.

"Do you know what a comparative musicologist is?" asked the Chief.

I'd had a hard morning and my reflexes were on the slow side. "No," I confessed.

"The Professor will be glad to tell you," the Chief said, and he walked away laughing.

The Professor was more than glad to tell me. He dragged in a few crates of apparatus and lectured to me for two hours. When he had finished, I still didn't know what a comparative musicologist might be, but I had a very good idea about what should be done with the Professor.

THE HIMARD supply ship was leaving that evening. I put the Professor and his equipment on board. He went quietly, if not eagerly, because I had given him a stirring description of the unusual vocal music to be found among the natives there.

I want it understood that there was neither malice nor ignorance behind my sending him to Himard.

Of course I knew that the natives on Himard were tone deaf.

I thought that the Professor would discover that for himself in something under twenty-four hours. But even if he did, it would be a month before he could get back to Base VII and I needed that month to get over his lecture on comparative musicology.

I overrated the Professor. He was gone for two months, and when he came back, he was a hospital case. He never did find out that the natives were tone deaf. But he bothered them so persistently and was so determined to make them sing into his recording machine that they began to think he was ridiculing their musical inadequacy.

People can be sensitive about a deficiency when an Earthling in long whiskers keeps making an issue of it. They nearly killed the Professor.

I thought it might cost me my

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job, but he never filed a complaint. He still doesn't know those natives were tone deaf. He thought they were just unusually belligerent.

He came to see me the day he got out of the hospital. "I'm very sorry to bother you again," he apologized.

"Don't mention it," I said. "How did you enjoy the music on Himard?"

"Wonderful! Really, it was marvelous. Most unusual, too. But I'm afraid it is not exactly suitable for my purposes. I wonder if you would suggest —"

"Another planet?"

"Yes, if you would be so kind. If possible, one where the inhabitants are a bit more peaceful."

I looked at the work piled on my desk and thought about the time it would take to go through the files looking for accidental references to music. I didn't even know that there were any. I couldn't recall ever having seen a single one.

Then I had an inspiration. I remembered the siren I'd had built for the natives of Lamruth.

"This might interest you," I said. "On Lamruth, there is an open-air concert once a week. The music is produced by some mysterious instruments which are carefully guarded. The concerts are so popular that natives walk miles to hear them."

THE Professor's eyes sparkled. It may have been my imagination, but I think he drooled a little, too.

"Amazing," he said. "Such a level of musical development on these outlying planets has never been suspected."

"You'll find the music unique," I promised him. "But I'll warn you about one thing — don't attempt to see the musical instruments or ask questions about them. The natives might react violently."

"I shall proceed cautiously," he said. He still wore some bandages from his Himard adventure.

A week later, the Professor left for Lamruth. I never saw him again, but I heard some pretty funny reports about what he did there.

He was astonished by the music of Lamruth. He observed, listened and recorded. He analyzed and synthesized. Then he returned to Earth and wrote a book, and the Galactic Commission, with its usual disregard for the value of the taxpayers' money, published it.

I've never seen the book. Few people have, but I understand that it contains several hundred pages of fine print, many sheets of music, a long series of mathematical calculations concerning the Lamruth musical system, and photographs of the enraptured

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natives listening to my synthetic air raid siren. It winds up with an essay on the sociological implications of music on Lamruth.

What happened next is too fantastic to believe, but I'll remind you that these events are documented in the Galactic Commission Scientific Studies, Series 9847, Volume 432.

A librarian in an obscure library on Mars noticed the pages of calculations in the Professor's book and classified the book as mathematics. It collected dust in that section of the library for two years. Then a passing mathematician accidently knocked it off the shelf. He picked it up to see what had hit him and noticed those same mathematical calculations.

He took the book home and studied it and wrote a paper on a new mathematical basis for musical sounds.

The paper was read by a scientist on Earth, who used it as the point of departure for a theoretical study in the latent energy of sound waves. An engineer saw this study and published a speculation on the amount of unharnessed energy released hourly in the noise of the average large city. Other scientists and engineers became interested and eventually they evolved the now famous Fottengil Process, by which all major cities of Earth have free electrical power conveniently processed from their own noise.

IT SOUNDS fantastic, but as I told you, it's all documented. The Galactic Commission uncovered this strange series of events in a special investigation into the sources of the Fottengil Process. Lavish rewards were made to all who had contributed, including the librarian who misclassified the Professor's book.

The Professor was given a generous pension for life, in spite of the fact that other musicologists had proven his mathematical calculations to be completely in error. Even the Chief was rewarded for the cooperation extended to the Professor by his department. He was transferred back to Earth and given a soft job with double the salary.

The one who started the entire development — namely myself — was all but forgotten.

It was I who had that siren built in the first place.

It was I who sent the Professor to Lamruth.

And I'm now a sub-clerk in the Special Problems Section on Base XVI.

It's true that there is a sign on my desk that says "Cultural Adviser." It is also true that I don't have much work to do, because not many people come here after cultural advice — only two

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this year, so far. The last one was an art expert. I told him I'd heard of three-dimensional paintings on Calmus and got rid of him within twenty-four hours. He may not be back, because the natives on Calmus have no eyesight and they tend to be sensitive about that.

My job is easy and the government service provides regular pay credits. But I'm stuck here on Base XVI, with no one for company but haughty department heads and a lot of moronic subclerks, and the climate is terrible.

I wouldn't have you think I'm bitter about it, but I want to set the record straight.

I ask you, is that any way to reward the person responsible for the Fottengil Process?

— LLOYD BIGGLE, JR.

★ ★ ★ ★ ★

FORECAST

The big news next month is the return of William Tenn, bringing with him, very much alive and fighting, TIME IN ADVANCE—and if you have any illusion that you will relax while reading this novelet, frown a bit over this situation: By using the installment plan, Crandall endured the worst that the Galaxy had to offer. Now it was Earth's turn to sweat! Take our word for it—you've never encountered an installment plan like the one Tenn has created—nor such menace as these murderously tough payments produce *after they are finished!*

Opening a new planet? Then read Robert Sheckley's novelet EARLY MODEL and take Bentley's advice—invulnerability is a great thing, but you practically need omniscience to make sure you don't overdo omnipotence!

Remember that last month's Forecast declared that Sturgeon is back again in full production? To round out a muscular trio of novelists, he offers THE CLAUSTROPHILE—and anybody trying to give a brief description of the story without blunting its point is in for a struggle something like this: Every once in too great a while, along comes a yarn that takes a good, hard-headed, practical fact—and shows that the fact is nothing but poor, pudding-headed, completely impractical nonsense. That is exactly what Sturgeon has done here . . . and its effect could revolutionize existing theory by turning it clear around . . . and plumping it down squarely on its feet!

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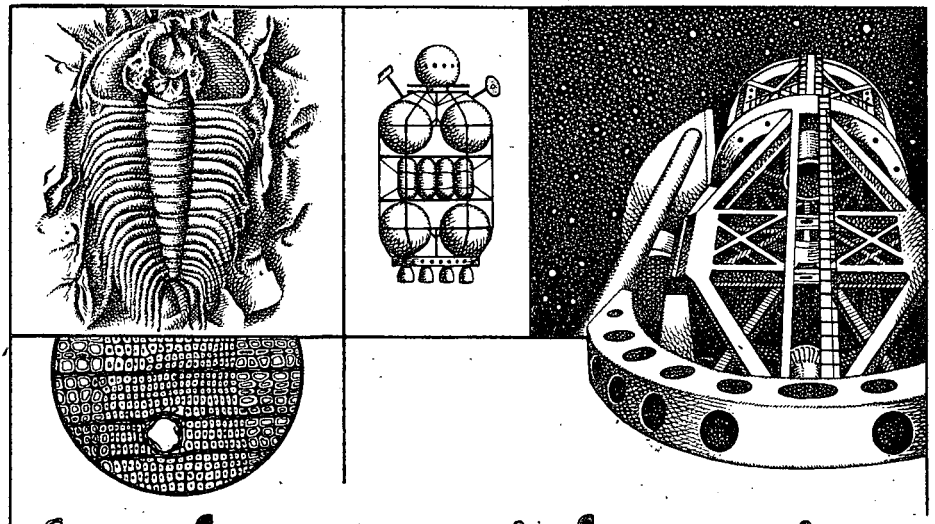

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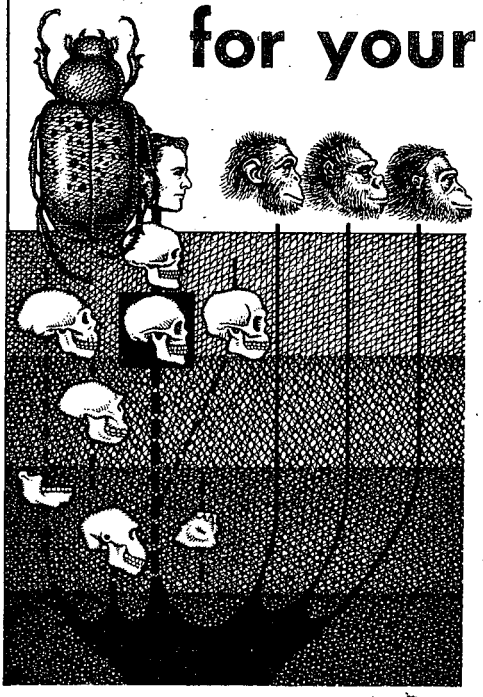
By WILLY LEY



WELCOME TO REALITY, C-TI

SORTING old correspondence, I just came across a typewritten page which was the beginning of a GALAXY column I had started and did not finish.

I don't recall any more why I changed my mind then, but because of certain clues I know that it was written during the latter part of January, 1955. Here is what I wrote then:

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"If contra-terrene matter does not exist, Nature performed an elaborate hoax last year in order to make us believe that it does. Some time during 1954 — date undisclosed — a Skyhook balloon hovered for six hours at a height of a little more than 10,000 feet over Texas. It had been released from Goodfellow Air Force Base in Texas and was part of a joint research project of the Office of Naval Research and the Atomic Energy Commission. The equipment carried in the gondola was of the kind that detects and records cosmic rays.

"When the 'catch' was examined later by Professor Marcel Schein and his colleagues of the Department of Physics of the University of Chicago, they saw that they had indeed caught something unusual. Nothing like it had ever been seen before — it was a 'pure photon shower.' Twenty-one photons were counted in a very small space, with energies from somewhat below 1000 million electron volts to as much as 20,000 million electron volts.

"The total energy release amounted to 10^{10} (or 10,000 million million) electron volts. This in itself would be fantastic and new enough. But when the scientists looked for the heavy charged particles which one would expect as the cause of such a burst, there weren't any."

THIS is as far as I got then. Now, only one year later, the whole thing is outdated.

We no longer have to say that such a photon shower must have been caused by a particle of contra-terrene matter. (Dr. Zwicky had predicted in a letter published in vol. 48, 1935, of the *Physical Review* that such particles could be found only at extreme altitudes.) We no longer have to quote this case as possible evidence for the probable existence of contra-terrene matter.

In fact, it does not matter if this particular case is never explained down to the last photon. For in October, 1955, contra-terrene matter was made at the University of California. This matter being what it is, it is a good thing that they can make it only an atom at a time.

Contra-terrene matter, despite apparent evidence to the contrary, was not thought up by a science fiction writer. It appeared in print for the first time in 1934 in a very technical work with the title *Die moderne Atomtheorie* (Modern Atomic Theory) which was a symposium published by Professor W. Heisenberg, a Nobel Prize winner. The chapter discussing the possibility of "reverse matter" was by another Nobel Prize winner, Dr. P. A. M. Dirac.

Dirac reasoned thus: There

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was a small particle carrying a negative charge, the electron. Its opposite number was the proton, carrying a positive charge, but more than 1800 times as massive as the electron. Then there was the neutron, about as massive as the proton, but without any electrical charge.

Dirac concluded that there should be another set of atomic particles, namely the "anti-electron" and the "anti-proton." The anti-electron should have the same mass as an electron, but carrying a positive charge. The anti-proton, of course, would have the mass of the proton, but with a negative charge.

EVERY ordinary atom that we know consists of a nucleus of protons and neutrons, surrounded by a number of electrons arranged in several layers, called shells. If Dirac's two unknown particles existed, there should be a matter of an entirely different type, with negatively charged anti-protons in the nucleus and surrounded by anti-electrons.

Theoretically you could have a counterpart of every element built up in this matter. To the eye, there would be no difference between ordinary (or "terrene") iron and such contra-terrene iron. Most likely it would have the same melting point. The spectroscope could not tell them apart. But if the twain should meet, they would utterly annihilate each other with nothing left but pure energy. Of course iron did not have to meet iron; contra-terrene iron meeting terrene air would produce the same effect.

Dirac's "anti-electron" was actually discovered some time later and became known as a positron.

It remained to find the anti-proton, tentatively called "negatron." But that was not easy. Even if such matter existed elsewhere in space, it could not penetrate the atmosphere. It would make only a very bright flash at very high altitudes and such a bright flash would not be much of a proof.

V. Rojansky calculated in 1940 that a contra-terrene iron meteorite, if it was to reach the surface, would have to be 16 inches in diameter and 60 inches in length. Even then it had to fall without tumbling or else it would be consumed completely while still falling.

There were a few cases on record that looked suspicious in the light of this theory, the best known being the great Siberian meteorite of 1908. But since, by definition, no meteoritic matter could be left, there could never be any palpable evidence. And as the years wore on, several scientists tried to find reasons why the

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anti-proton was "unnecessary" and "therefore" probably did not exist.

Well, anti-protons have now been produced in the laboratory. Naturally they lasted for only a tiny fraction of a second with all that inimical terrene matter around. But they could be observed. They were there and — surprise! — their so-called cross section turned out to be about double of that of the proton. Maybe the spectroscope will still be useful; nobody can tell at the moment. But knowing now what to go after, we'll know soon.

SQUARE AND CIRCLE

THE year was 1775 A.D. The most important scientific body then in existence — overshadowing even the Royal Society of London to all but Englishmen — namely the Academy of Sciences in Paris, announced a resolution which said that the Academy would no longer investigate or examine alleged solutions of the problem of squaring the circle which might be submitted. The same went for the so-called Delian problem of doubling a cube or for the trisection of angles.

Dissemination of news was not what it is now in 1775. Many people outside of Paris engaged in these three problems apparently did not learn that the Academy had declared them, by implication, to be insoluble. Papers and pamphlets continued to come in. But one has the feeling that, even if the authors of these papers had learned about the Academy's attitude, they would not have been discouraged, for that is something you cannot do to a true circle squarer.

As regards the other two problems, the number of people addicted to them seems to have been smaller at any time in history. Speaking of the present, I can only say that I have never met anybody who spent his evenings trying to double a cube. I did meet three or four tri-sectors, but I have come across at least half a dozen circle squarers. It is this particular problem which seems to have held, and still holds, a fascination that simply cannot be understood by the non-addict.

Interestingly enough, the circle squarers of the more recent past — say the last hundred years — always invented a so-called "good-reason" for their endeavors. They thought and said that the squaring of the circle would also reveal the Secret of the Universe — why and how, in the name of Pythagoras, and which secret did they mean? — or else they were convinced that somebody, somewhere, had substantial sums of

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money waiting to be awarded as a prize to the successful genius.

While there have been money prizes for various mathematical problems at one time or another, it so happens that there never was one for that particular problem—except in the sense that at least two people offered prizes for finding a mistake in their solutions. One of these two offered a thousand dollars (at a time when four dollars was a good week's pay) and the other offered fifty pieces of gold. Both had to pay within a few years after offering the rewards.

But I once knew a circle squarer who confided to me that the Government had a secret prize in readiness. That a secret prize is a plain absurdity just never occurred to him. Incidentally, he did not claim to have found the solution.

WELL, to go into the story itself, let's look at the problem first. The problem is to construct a square of *precisely the* same area as a given circle. Emphasis is on the word *precisely;* a difference of a mere one-tenth of one per cent or even of a ten-millionth of one per cent is not acceptable. It has to be precise. Along with this demand there goes a condition. The condition of that square has to be accomplished by using only two tools: a pair of compasses and an unmarked straight edge. If that classical condition is neglected, a solution can be found. Leonardo da Vinci is the author of what is probably the earliest one.

To construct a square of the same area as a given circle, da Vinci made a roller of the same diameter as the circle. The thickness of the roller was one-half of the radius of that circle — one-quarter of its diameter. Running the inked roller on a sheet of paper for precisely one revolution resulted in a rather long and narrow rectangle of the same area as the circle. To convert the rectangle into a square by geometrical construction was elementary. With instruments in addition to the pair of compasses and the unmarked ruler, it can be done.

But when you do observe the classical condition, things have a habit of getting tough very fast — and of staying that way. One way tried by many is shown in Fig. 1. There you have the circle. You put one square inside it and another one around it; obviously the inscribed square is smaller in area than the circle, while the circumscribed square is larger. The wanted square is evidently intermediate in size. To construct it, we halve the distance between the two squares and draw a third one (dotted line in Fig. 1). It looks as if it might be of the

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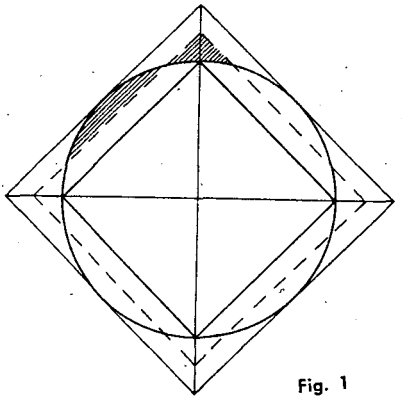

Fig. 1

right size.

To prove that it is, you have to prove that the protruding segment of the circle and the protruding corner of the square are equal in area — to make this more easily visible, one of each has been shaded in the drawing. Well, in this particular case, the two areas are not equal, as one can easily see. But if you had a square of a slightly larger size where the two areas look equal, you could not prove their equality by any means, even if it happens to be the case of sheer accident.

JUMPING somewhat ahead of the actual historical development, one may ask whether there was a reason why so many people through so many centuries believed that it could be done. There was. There was a case where it could be proved that a figure bounded by pieces of circles was precisely equal in area to another figure bounded by straight lines.

This case is known to mathematicians as the menisci or lunulae of Hippocrates of Chios, who lived in Athens during the second half of the fifth century B.C. It may be wrong to say that he caused the waste of more man-hours than anybody since his time, but he certainly ranks high among inventors of misleading evidence.

Look at Fig. 2. You have there a triangle in which one angle is a right angle and both cathetes and the hypotenuse are adorned with a half circle each. The half circle *A* has, of course, the largest area, while the areas of *E* and *D* are smaller. None of them has an area which is either equal to or a simple fraction of the area *T* of the triangle. But $E + D = A$; the two smaller semicircles taken together have the same area as the larger one.

Now we redraw the same thing as shown in Fig. 2B. The largest of the three semicircles then splits each of the smaller ones into two unequal areas. The former area *E* now consists of $e + e'$ and the former area *D* now consists of the areas $d + d'$. The largest semicircle obviously is the sum of $T + e' + d'$. Since $e + e' + d + d'$ are equal to *T*

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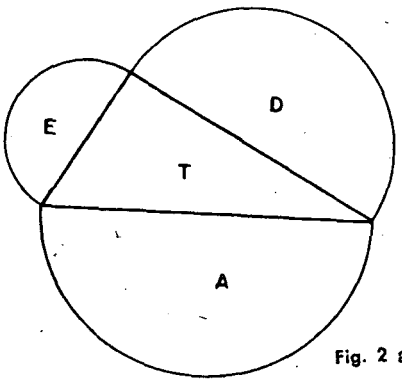
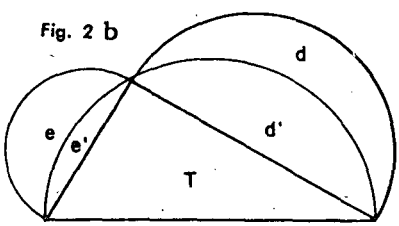


Fig. 2 a

Fig. 2 b



$+ e' + d'$, the area T must be equal to $e + d$. In words: the area of the two lunulae equals the area of the triangle. If this does not look like a possible approach to converting a circle into a square, *nothing* does.

The similarity can easily be carried a step farther by drawing the figure 3. The square inscribed in a circle demonstrably consists of four triangles; all you have to do is to connect the four corners by two lines which are also diameters of the circle. Then you construct the four lunulae. And there can be no doubt that $A = a$, $B = b$, $C = c$ and $D = d$. Of course A will equal d etc. etc. And $A + B + C + D$ equals the square.

All you have to do now is to convert the four lunulae into one circle and the problem is solved. But if you try to do that, you'll find out, after an hour or after three years, depending on your individual persistence, that it cannot be done.

The lunulae of Hippocrates are an interesting and very special case which only happens to look as if it bore any relationship to the problem.

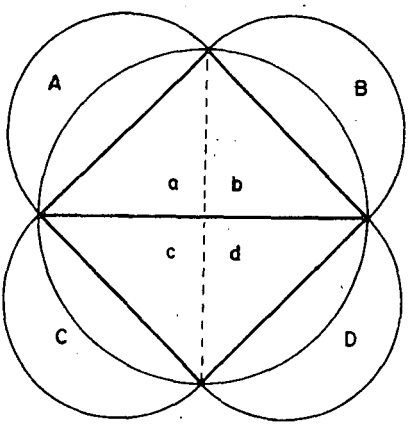


Fig. 3

BUT the whole thing, countless people have moaned through the centuries, looks so simple on principle! You can prove that a certain triangle *must*

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have the same area as a given circle. The height of that triangle must be equal to the radius of the circle and its base must be equal to its circumference. It remains to construct such a triangle. The height presents no problem, of course, but just what is the length of the base?

This problem has a separate name. It is called the rectification of the circle, but actually rectification and quadrature go hand in hand. If one could solve the one, the other would be solved automatically.

Well, the circumference of the circle is its diameter multiplied by something, namely the ratio of diameter to circumference. Everybody knows now that this ratio is called by the Greek letter *pi,* and since the problem came down to us from the Greeks, one has the tendency to assume that it was "always" called by that letter.

Actually the use of *pi* to designate this value is rather recent. It was used that way for the first time by the Englishman William Jones in 1706 in a book with the title *Synopsis palmariorum Mathesos,* which was an introduction to mathematics. Mr. Jones' usage was then popularized by Leonhard Euler in his voluminous correspondence as well as in his main work, the *Introductio in analysin infinitorum* which appeared in 1748.

The wrestling with this value goes back past the Greeks for good and practical reasons. The oldest figure we have is that given in the Papyrus *Rhind.* The copy of the papyrus we have is not the original; it says in the manuscript itself that it was copied by clerk Ahmes, the servant of the king Raaus, which dates the copy as having been made in about 1700 B.C. The papyrus states that the area of a circle is equal to a square constructed with the base of 8/9th of the diameter. In decimal notation, this makes *pi* equal to 3.1604, which is better than the figure given in the Bible (1 Kings, vii, 23 and 2 Chronicles iv, 2 if you want to check) where the value of *pi* appears as a straight three.

Among the Greeks, the first to come up with a value was Archimedes, who stated that the figure was greater than 3 10/71 but smaller than 3 10/70. Compared to the modern value, these figures look as follows:

3 10/71 = 3.14084
pi = 3.14159 . . .
3 1/7 = 3.14285

This is really good enough for most practical purposes and the value of 3 1/7 was used for many centuries for such things as measuring the iron rim for a wheel or cutting paving blocks for a circular enclosure of some kind.

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ROMAN surveyors know Archimedes' approximation of 3 1/7, but are said to have used 3 1/8 in their work since it made calculations that much easier!

Of the Chinese, we know what values were used by some of their mathematicians, but we do not know how they arrived at them.

One Wang Fau used the ratio 142/45, which is 3.1555, while Chang Hing thought that *pi* was equal to the square root of 10, which is 3.1622777, an accidental similarity that has troubled many later circle squarers. (Another such similarity has caused many geometrical constructions, namely the fact that the square root of 2 plus the square root of 3 closely resembles *pi*. The figures are 1.4142136 + 1.7320508 = 3.1462644.) The best Chinese approximation was that of the astronomer Tsu Ch'ung-chih (born in 430 A.D.) who arrived at the ratio of 355/113 or 3.1415929.

Of the men of the Renaissance who tried their hand on the rectification of the circle, I'll mention only Nikolaus Chrypffs, who was born at Kues on the Moselle in 1401 and became known later in life as Cardinal Nicolaus Cusanus. His construction is shown in Fig. 4. If the smaller circle to the left is the given circle, you construct one side of the inscribed square AB and use this to establish point C. Then you draw a circle the center of which is halfway between point C and the center of the first circle. The triangle inscribed in this second and somewhat larger circle has the same circumference as the first circle. Or rather it would have if *pi* were equal to 3.1361.

A much better, slightly more accurate and at any event faster approximation is the one shown in Fig 5. The construction is obvious from the drawing. The line ABC, when multiplied by two, is a fraction of a per cent longer than the circumference of the circle.

The construction shown in Fig. 6 is even more elegant. It was found in 1685 by Adam Kokhansky, the Royal Mathematician of the King of Poland.

The construction begins with

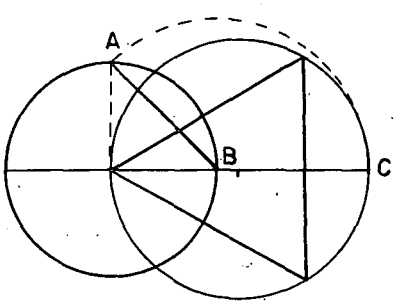

Fig. 4

the circle, a tangent and a diameter which touches the peri-

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phery in the same point as the tangent. Then you construct an angle of 30°, which establishes point A on the tangent. Then you proceed along the tangent for 3 radii, which establishes point B.

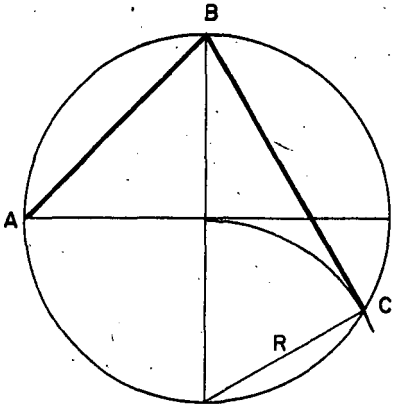

Fig. 5

$AB = \sqrt{2}\ R$

$BC = \sqrt{3}\ R$

The line from B to C represents half the periphery of the circle. It does so with surprising accuracy, for it would be correct if *pi* were 3.141533.

Actually, *pi* is a so-called transcendental number which cannot be expressed accurately either by decimals or as a fraction. Since this cannot be done, it cannot be constructed. You can produce almost any degree of accuracy you wish, but it cannot really be accurate — provided, to repeat, that you stick to compass and unmarked straight edge as the instruments employed.

BUT though most people know by now that a fully accurate construction is impossible, every once in a while somebody succeeds in coming up with a new approximation that has been missed in the past. In 1910, a German civil servant, Peter Pupovac, submitted to a mathematician the construction shown in Fig. 7. You divide the diameter of the circle into five parts, add one more and draw a vertical line in that point. You make it three divions high. The sum of the three sides of this triangle nearly equals the circumference of the circle, namely 6/5 + 3/5 + 3/10 multiplied by the square root of five. This amounts to 3.14164, so the sum of the sides of the triangle is 0.00005 diameters too large.

Another surprising approximation—this time a direct quadrature rather than a rectification—was found accidentally by a German officer in World War I. During a period of quiet in springtime, when the lilacs were in bloom, he amused himself by trying to draw a representation of a lilac blossom with nothing but a pair of compasses. When he had obtained a result which he considered a good representation, he

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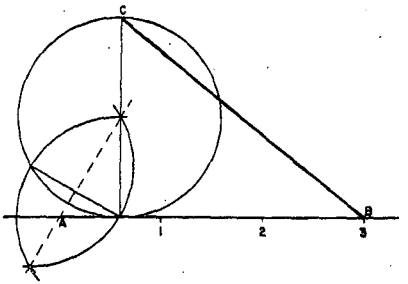

Fig. 6

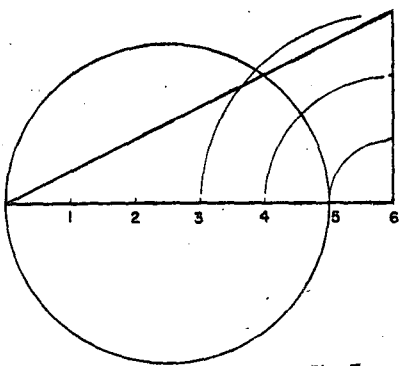

Fig. 7

noticed that a circle and a square overlapped. (Fig. 2) They looked as if they were equal in area.

After the war, he sent the figure to a mathematician, Dr. Theodor Wolff, with the question whether Nature might not have accomplished something that Man had failed to do. Dr. Wolff had a ready answer, namely that Nature, if she had found a solution, had done so in violation of the classical rule,

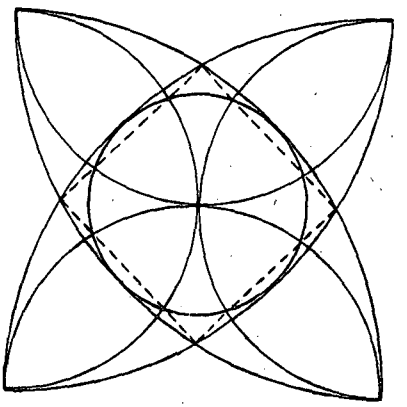

Fig. 8

something which Man could do, too. Then he calculated what mistake, if any, Nature had made.

Nature had not solved the problem even by using non-classical methods. The difference between the areas of the circle and the square is a little less than one per cent of the circle's area.

The savants of the French Academy who decided not to waste their time any more by examining so-called solutions of the circle-square problem would have liked this little touch. Even Mother Nature can't do it correctly!

—WILLY LEY

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Writing of the Rat

By JAMES BLISH

Everything about the aliens was a galactic puzzle . . . but the key was under the mat!

THEY had strapped the Enemy to a chair, which in John Jahnke's opinion was neither necessary nor smart, but Jahnke was only a captain (Field rank). Ugly the squat, gray-furred, sharp-toothed creatures were, certainly, and their thick bodies, well over six feet tall, were frighteningly strong. But they were also proud and intelligent. They never ran amok in a hopeless situation; that would be beneath their dignity.

The irons were going to make questioning the creature a good deal more diffiicult than it would have been otherwise — and that would have been difficult enough. But Jahnke was only a Field officer and, what was worse, invalided Home. Here it could hardly matter that he knew the Enemy better than any other human being alive. His opinions would be weighed against the fact that he had been invalided Home from a Field where there were no battles. And the two years of captivity? A rest cure, the Home officers called them.

"Where did you take him?" he asked Major Matthews.

"Off a planet of 31 Cygni," Mat-

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thews growled, loosening his tie. "Whopping sun, a hundred fifty times as big as Sol, six hundred fifty light-years from here. All alone there in a ship no bigger than himself."

"A scout?"

"What else? All right, he's ready." Matthews looked at the two hard-faced enlisted men behind the Enemy's chair. One of them grinned slightly. "Ask him where he's from."

The gray creature turned flat steady eyes on Jahnke, obviously already aware that he was the interpreter. Sweating, Jahnke put the question.

"Hnimesacpeo," the Enemy said.

"So far, so good," Jahnke murmured hopefully. "Hnimesacpeo *tce rebo?*"

"*Tca.*"

"Well?" Matthews demanded.

"That's the big province in the northern hemisphere of Vega III. Thus far, he's willing to be reasonable."

"The hell with that. We already knew he was Vegan. Where's his station?"

WHETHER or not the Enemy was Vegan was unknown and might never be known. But there was no point in arguing that with Matthews; he already thought he knew. After a moment's struggle with the language, Jahnke tried: *"Sftir etminbi rokolny?"*

"R-daee blk."

"Either he doesn't understand me," Jahnke said resignedly, "or he won't talk while he's in the chair. He says, 'I just told you.'"

"Try again."

"Dirafy edic," Jahnke said. *"Stfir etminbu rakolna?"*

"Hnimesacpeo." The creature's eyes blinked once. *"Ta hter o alkbee."*

"It's no good," Jahnke said. "He's giving me the same answer, but this time in the pejorative form — the one they use for draft animals and children. It might go better if you'd let him out of those irons."

Matthews laughed shortly. "Tell him to open up or expect trouble. The irons are only the beginning."

"Sir, if you insist upon this course of action, I will appeal against it. It won't work and it's counter to policy. We know from long experience Outside that—"

"Never mind about Outside; you're on Earth now," Matthews retorted harshly. "Tell him what I said."

Worse and worse. Jahnke put the message as gently as he could.

The Enemy blinked. *"Sehe et broe in icen."*

"Well?" Matthews snapped.

"He says you couldn't run a maze with your shoes off," Jahnke

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said, with grim relish. The phrase was *the* mortal insult, but Matthews wouldn't know that; the literal translation could mean little to him.

Nevertheless, Matthews had brains enough to know when he was being defied. He flushed furiously. "All right!" he told the toughs. "Start on him—and don't start slow!"

Jahnke was abruptly wishing that he hadn't translated the insult at all, but the outcome would probably have been the same in the long run. "Sir," he said, his voice ragged, "I request your permission to leave."

"Don't be stupid. Do you think we're doing this for fun?" Since this what exactly what Jahnke thought, he was glad that the question was rhetorical. "Who'll translate when he does talk, if you're not here?"

"He won't talk."

"Yes, he will," Matthews promised savagely. "And you can tell him why."

After a moment, Jahnke said stonily: *"Ocro hli antsoutinys, ſuso tizen et tobee."*

IT WAS a complex message and Jahnke was none too sure that he had got it right. The Enemy merely nodded once and looked away. There was no way of telling whether he had failed to understand, had understood and was trying to avoid betraying Jahnke, or was merely indifferent. He said: *"Seace tce ctisbe."* The phrase was formal; it might mean "thank you," but then again it might mean half a hundred equally common expressions, including "hello," "good-by," and "time for lunch."

"Does he understand?" Matthews demanded.

"I think he does," Jahnke said. "You'll be destroying him for nothing, Major."

Two hours later, the gray creature looked at Matthews out of his remaining, lidless eye, said clearly, *"Sehe et broe in icen,"* and died. He had said nothing else, though he had cried out often.

Somehow, that possible word of thanks he had given Jahnke made it worse, not better.

Jahnke went back to his quarters on shaky legs, to compose a letter of protest. He gave it up after the first paragraph. There was nobody to write to. While he had been Outside, he could have appealed to the Chief of Intelligence Operations (Field), who had been his friend as well as his immediate superior. But now he was in New Washington, where the CIO(F) in his remote flagship swung less weight than Home officers as far down the chain of command as Major Matthews.

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It hadn't always been like that. After the discovery of the Enemy, the Field officers had commanded as much instant respect at Home as Field officers always had; they were in the position of danger. But as it gradually became clear that there was going to be no war, that the Field officers were bringing home puzzles instead of victories, that the danger Outside was that of precipitating a battle rather than fighting one, the pendulum swung. Now Field officers treated the Enemy with respect and were despised for it — while the Home officers itched for the chance to show that *they* weren't soft on the Enemy.

Matthews had had one chance and would be itching for another.

Jahnke put down his pen and stared at the wall, feeling more than a little sick.

THE gray creatures were, as it had turned out, everywhere. When the first interstellar ship had arrived in the Alpha Centauri system, there they were, running the two fertile planets from vast stony cities by means of an elaborate priesthood. The relatively infertile fourth planet they had organized as a tight autarchy of technicians, dominating a high-energy economy of scarcity. They had garrisoned several other utterly barren Centaurian planets, for what was vaguely called "reasons of policy," meaning that nobody knew why they had.

That had been only a foretaste. No habitable planet was without them, however far you stretched the definition of "habitable." Their most magnificent achievement was Vega III, an Earthlike world twice the diameter of Earth and at least a century in advance of Earth technologies. But they were found, too, on the major satellite of 61 Cygni C, a "gray ghost" star almost small enough to be a gas-giant planet, where they lived tribal lives as cramped and penurious as those of ancient Lapland—and had the Ragnarok-like mythology to go with it.

No one could even guess how long they had known interstellar flight or where they had come from. The hypothesis that they had originally been Vegans was shaky, based solely on the fact that Vega III was their most highly developed planet yet discovered. As for facts that argued in the opposite direction, there were more than enough, from Jahnke's point of view.

They had, for instance, a common spoken language, but every one of their civilizations had a different written language, usually irreconcilable with all the others — pictograms, phonetic systems, ideograms, hieratic short-

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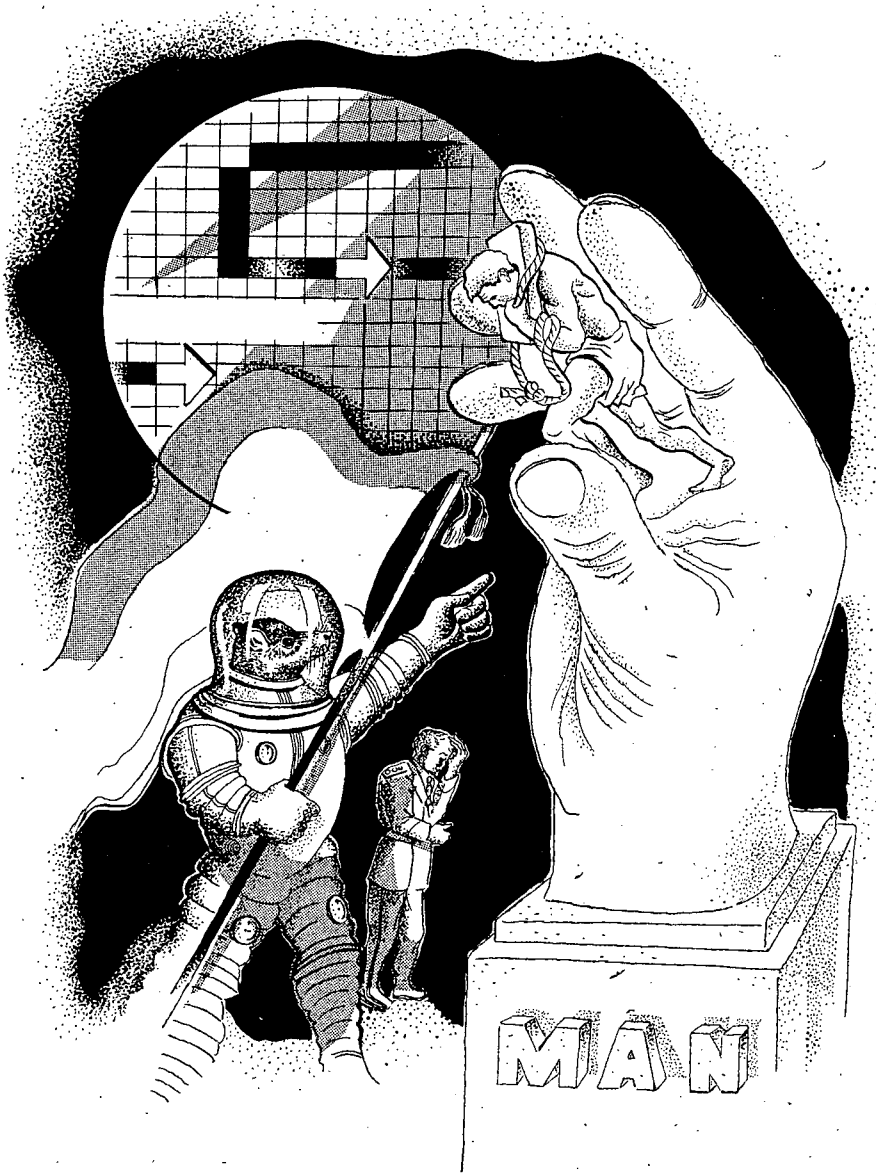

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hands, inflectional systems, tone-modulated systems, positional systems—the works. The spoken language was so complex that not even Jahnke could speak it above primer level, for it was based on phoneme placement inside the word. In short, it was totally synthetic, derived from the Enemy's vast knowledge of information theory, and could be matched up *in part* to any written language imaginable.

Thus there was no way to tell what written language — which always abstracts from speech and introduces new elements that have nothing to do with speech —might have been the original.

AND how can you be sure you know where the Enemy's home planet is, Jahnke brooded, when you can see him still actively exploring and taking over one new system after another, for no other visible reason than sheer acquisitiveness? How can you tell how long that process has been going on, when *no* new penetration of human beings to more distant reaches of the Galaxy fails to find the gray creatures established on two or three promising planets, and nosing in on half a dozen additional cinder-blocks which have nothing to recommend them but the fact that they are large enough to land upon?

"They're nothing but six-foot-tall rats," Col. Singh, the CIO(F), had once told Jahnke, in a tone of disgust unusual for him. "The whole damned Galaxy must be overrun with them. They couldn't have evolved any civilization we ever found them in."

"They're intelligent," Jahnke had protested. "Nobody's yet measured how intelligent they are."

"Sure," Singh had said. "I'll give them that much credit. They're more than intelligent—they're brilliant. Nevertheless they didn't evolve any of 'their' civilizations, John. They couldn't have, because the civilizations are too diversified. The Enemy maintains all of them with equal thoroughness and equal indifference. If we could just explore some of those planets, I'll bet we'd find the bones of the original owners. How does that poem of Pound's go?"

His brow furrowed a moment over this apparent irrelevancy and he quoted:

"And the wind shifts
and the dust on a doorsill shifts
and even the writing of the rat
footprints
tells us nothing, nothing at all
about the greatest city, the
greatest nation
where the strong men listened
and the women warbled:
Nothing like us ever was.

"That's how it is," Singh added

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gloomily. "All these gray rats are doing is picking everybody else's cupboards. They're very good at that. They may well be picking ours before long."

That was the second theory; on the whole, it was the most popular one now. It was the theory under which a man like Matthews could torture to death a creature several times as intelligent as he was and with a code of customs and a set of moral standards which made Matthews look like a bushman, on the grounds that the Enemy were merely loathsome scavengers, fit only for extermination.

DESPITE his respect for Piara Singh, Jahnke could find little good to say for the rat theory, either. Both theories pointed, in the end, toward a common military goal — that of finding the Enemy's home planet and destroying it. If Vega III was the Enemy's home, then at least there was a target. If the Enemy were spreading from some other heartland, then the target still remained to be found.

But what good was that? It was military nonsense. The Enemy outnumbered humanity by millions to one. On the highly developed planets like Vega III, the Enemy commanded weapons compared to which humanity's best were only torches to be waved in the face of the inevitable night. The first moment of open warfare would be the end of humanity.

So far, the gray creatures and humanity were not at war. But the time of the explosion was drawing closer. Jahnke did not really think that the Enemy could be still in ignorance of Earth's practice of picking up its lone scouts for questioning; the Enemy's resources were too great.

It was his private theory, shared by Piara Singh, that the Enemy was content to let its scouts be questioned, as long as they were set free unharmed later. After all, the Enemy had once picked up Jahnke under the same circumstances and for that same purpose. It was for that reason that he knew their language better than any other human being; he had lived among them for two years.

But if Matthew's Inquisition methods represented a new and general policy toward these occasional captives, the Enemy would not let that policy go unprotested. The gray creatures were very proud. Jahnke knew that, for they had expected no less pride of him.

And what would happen when one of the Enemy's scouts came nosing, at long last, into the Solar System of Earth — even around so cold, dark and useless a world

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as the satellite of Proserpine, far beyond Pluto? Earth had no use for that rockball, but it would never let the "rats" have it, just the same. The gray tide had spared the Sol system, but that couldn't last forever. It had spared nothing else.

The phone rang insistently, jarring Jahnke out of his bitter reverie. He picked it up.

"Captain Jahnke? One moment, please. Colonel Singh calling."

JAHNKE clung to the phone in a state of numb shock, uncertain whether to be delighted or appalled. What could Piara Singh be doing here, out of the high free emptiness of Outside? Had he been invalided Home again, too, or had some failure—

"John? How are you? This is Singh; I called the moment I got in."

"Hello, Colonel. I'm astonished and pleased. But what—"

"I know what you're thinking," the CIO(F) said rapidly. His voice was high with suppressed eagerness; Jahnke had never heard him sound so young before. "I'm Home on my own initiative, on special orders I wormed out of old Wu himself. I brought a prisoner with me. John, listen, he's the most important prisoner we've ever taken. *He told me his name!*"

"No! They never do! It's against the rules!"

"But he did," Singh said, almost bubbling. "It's Hrestce. In the language, it means 'compromise,' isn't that right? I think he was deliberately sent to us with a message. That's why I came Home. The key to the whole problem seems to be in his hands and he obviously wants to talk. I have to have you to listen to him and tell me what it means."

Jahnke's heart tried to rise and sink at the same time, enclosing his whole chest in an awful vise of apprehension. "All right," he said faintly. "Did you notify CIO? Here in New Washington, I mean?"

"Oh, of course." Singh's enthusiasm seemed to be about to burst the telephone handset — and small wonder, after all the setbacks that had made up his career Outside. "They recognized right away how important this is. They've assigned their best interrogation man to me, a Major Matthews. I don't doubt that he's good, but we'll need you first. If you can get here for a preliminary talk with Hrestce—"

"I can get there," Jahnke said tensely. "But don't let *anyone* else talk to him before I do. This Matthews is dangerous; if he phones before I arrive, stall him. Where are you calling from?"

"At home on the Kattegat. I have three weeks' leave. You know the place, don't you? You

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can reach it in an hour, if you can catch a rocket immediately. I can keep Hrestce in my jurisdiction for you that long easily. Nobody but you and the CIO knows he's here."

"Don't even let CIO at him until I get there. I'll see you in an hour."

"Right, John. Good-by."

"Seace tce ctisbe."

"Yes — how does it go? *Tca."*

"Tce; tca."

TREMBLING with excitement and urgency, Jahnke got the rest of his mussed uniform off, clambered into mufti and packed his equipment: a tape recorder, two dictionaries compiled by himself, a set of frequency tables for the Enemy language which he had not yet completed, and a toothbrush. At the last moment, he remembered to take his officer's ID card and money to buy his rocket ticket. Now. All ready.

He opened the door to go out.

Matthews was there. His feet were wide apart, his hands locked behind his back, his face thrust forward. He looked like a lowering, small-scale copy of the Colossus of Rhodes.

"Morning, Captain Jahnke," Matthews said, with a slight and nasty smile. "Going somewhere? The Kattegat, maybe?"

The soldiers behind Matthews, those same two wooden-faced toughs, helped him wait for Jahnke's answer.

After a moment of sickening doubt, Jahnke retreated into his quarters, to the kitchen, out of Matthew's sight. He found the bottle of cloudy ammonia his batman used for scrubbing his floors and shook it until it was full of foam. Then he went back to the front room and threw the bottle as hard as he could into the corridor. It seemed to explode like a bomb.

He had to knee one soldier who clawed through the fumes into the front room; he got away over the man's writhing body. His eyes were streaming. Now he had to reach Singh before Matthews did.

It would be a near thing. Temporarily, at least, time was on his side, Jahnke was pretty sure. Piara Singh's Kattegat home was a retreat, quite possibly unlisted among the addresses the government had for him; Jahnke had learned of it only through a few moments of nostalgia in which the colonel had indulged over a drink. If so, Matthews would have a difficult time searching the shores of the strait for it, and might think only very belatedly of looking in the wildest part of Jutland.

Also in Jahnke's favor was the fact that Matthews was only a major. The man whose leave he had to plan on invading was a

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full colonel, even though only a despised Field officer — and the scorn in which Field officers were held was in itself only a symptom of the Home officers' guilt at being Home officers. Matthews would probably pause to collect considerable official backing before venturing further.

All this was logical, but Jahnke knew Matthews too well to be comforted by it.

He got a liner direct to Copenhagen, which cut down his transit time considerably. After that, there was only the complicated business of getting off the islands onto the peninsula, and thence north to Alborg. Col. Singh had a car waiting for him there, which took him direct to the lodge.

"An hour and a half," Singh said, shaking hands. "That was good time."

"Glad to see you, sir. We're going to have to move fast, I'm afraid; we're not safe even here. This Matthews is a dedicated sadist. Do you remember the prisoner that was sent home with me? Well, Matthews tortured him to death yesterday, trying to get routine information out of him. He'll do the same with your captive if he gets his hands on him. He knows I'm here, of course. Either my telephone wire was tapped or he knew that you'd call me as soon as the news trickled down to him at CIO."

AN EXPRESSION of revulsion totally transformed Col. Singh's lean brown face for a moment, but he said decisively: "So it's come to that; they must be cut off from the real situation Outside almost entirely, and it's their own fault. Well, I know what we can do. I have a private plane here and my pilot is the very best. We'll just take ourselves upstairs and defy this Matthews to get us down until we're ready."

"Where are we going?" Jahnke asked.

"I don't know at the moment and it doesn't matter. There are a lot of places to hide inside a thousand-mile radius where Matthews wouldn't think of looking for us, if we *have* to hide. But I think I can pull his teeth through channels before it comes to that. Come on, better meet the prisoner."

He led the way into the next room. The prisoner was looking at a book which, Jahnke could see as he put it aside, was mostly mathematics. He was an unusually big specimen even for an Enemy, almost seven feet tall, with enormous shoulders and arms, a deep chest, and a brow which gave him an expression of permanent ferocity. He looked as though he could have torn Jahnke and the colonel to pieces without the slightest effort, as indeed he probably could.

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"Hrestce, John Jahnke," Col. Singh said.

"Seace tce ctisbe," Jahnke said.

"Tca." Hrestce held out his hand and Jahnke took it, somewhat nervously. Then, drawing a deep breath, he quickly outlined the situation, pulling no punches. When he got to the part about the death of Matthews' prisoner, Hrestce only nodded; when Jahnke proposed that they leave, he nodded again. That was all.

In the cabin of the plane, Jahnke started his tape recorder and got out his manuscript dictionary. With Hrestce's first words, however, it became apparent that he wasn't going to need the dictionary. The Enemy spoke simply, though with great dignity, and quickly found the speech-rate which was comfortable for Jahnke. When he spoke to Singh, he slowed down even more; he seemed already aware that Singh's command of the language did not extend to high-order abstractions or subtle constructions.

"I AM an emissary, as Colonel Singh surmised," Hrestce said. "My mission is to apprise you of the search my people have been conducting and to take such further steps as your reaction dictates. By 'you,' of course, I mean mankind."

"What is the search?" Jahnke inquired.

"First I must explain some other matters," Hrestce said. "You have some incomplete truths about us which should be completed right now. You know that we occupy many dissimilar civilizations; you suspect that they are not ours and that the original owners are gone. That is true. You think you have never seen our home culture. That is also true; our planet of origin is far out on the end of this spiral arm of the Galaxy, from which we have been working our way inward toward the center. You think we have usurped the original owners of these cultures. That is not true. We have another function. We are custodians."

"Custodians?" Singh repeated.

"Of cultures, of entire ecologies. That is the role which has been thrust upon us. When we first mastered interstellar flight, sometime in the prehistory of your race, we found these abandoned planets by the hundreds. We found only a few inhabited ones, which I will describe in a moment."

"The research that followed was tedious and I shall do no more than describe its results. Briefly, there is a race in the Galaxy *which is practicing slavery upon an incredible scale.* We know who they are, for we have encountered several of their slave-planets, but they fight fero-

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ciously and without quarter, so that we have been unable to find out where they came from, or why they want so many billions and billions of slaves. Their usual practice, however, is to evacuate a planet entirely; there is evidence of resistance on all the empty worlds, but the battles and losses were never large — evidently the slavers utterly overwhelmed them. The bones we find never account for more than a tenth of the total population of the planet, usually much less. Yet the people are gone, leaving nothing behind but their effects, which the raiders seldom bother to loot.

"We do not know how many of these conquered and enslaved races are still alive. Under the circumstances, we have chosen to maintain each culture on its own terms, in the hope that at least some of them may be repossessed by their owners in the future, as we have already turned back the liberated worlds. It is for that reason that we have evolved this synthetic language, which is adaptable to any culture and carries the implicit assumptions of none."

The gray creature paused and the expression which crossed his face was something like a fleeting smile. "After speaking it for so many millenia, we find we rather like it. Some of us are doing creative work in it."

"I like it very well," Jahnke said. "It's highly flexible; I should think it might make a good medium for poetry."

"There you make a statement with import for your race." The smile, if that was what it had been, was gone without a trace. "It was your captivity, to some extent, that deterred us from wiping you all out at once, as we have the power to do. For I must tell you plainly now that *you are an outpost of the slavers we are seeking.*"

JAHNKE had seen it coming, if only hazily; but it hurt, all the same.

"We were in doubt at first. Though the physical form is the same, your obvious creativity and your frequent flashes of sanity and decency seemed anomalous. Also, there seemed to be evidence that you had evolved on this planet. Further investigation disposed of that point, however; of all your presumptive ancestors, only the extinct half-simian, stone-throwing culture of South Africa is indigenous to Earth. All the others, plus many forms that puzzle your naturalists, you brought with you from other planets — as slaves or food — and the stone-throwers you wiped out as being of too little intelligence to be useful. The Cro-Magnons, for example, were the descendants of the race of

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Vega III; there is no doubt whatever about it."

Jahnke asked hollowly: "What now? Since you have decided not to wipe us out—"

"There is the heart of the question," Hrestce said. "You have been cut off a long time from the moral monsters who spawned you and during that time you have changed. Your race still reverts to the parent type now and then: you produce an Alexander, a Khan, a Napoleon, a Hitler, a Stalin, a MacHinery — or a Matthews. But plainly, these are now sub-human types and will become even more rare with time.

"We have been hunting for the main body of these slavers for a long time. They have crimes beyond number to answer for. They may have changed greatly in twenty-five thousand years, as you have changed; if so, we will be gratified. If they have not changed, we are prepared to destroy them down to the last monster."

Hrestce paused and looked at the two men with somber ferocity.

"The task is enormous," he said, "because of the caretaking responsibilities that go with it. We would share it with someone if we could. We have decided to ask you if you would agree to to share it. The growth you have undergone is staggering; it shows potentialities which we believe are greater than ours."

A long sigh exploded from Singh; evidently he had been holding his breath longer than he himself had realized. " So all the time *you* were the rat-terriers and *we* were the rats. Matthews fits the description, all right. When I get through with him, he's going to be breaking rocks."

As for Jahnke, he would have found it hard to say whether he was awed or elated, for both emotions had overwhelmed him at once. Matthews and his breed were certainly through; the Field officers had brought home not only the bacon, but the laurel wreath — not a bloody victory to be lived down, but a mighty standard to be followed.

"Can we accept?" Jahnke breathed at last.

The colonel stood shakily and went forward to the door of the control cubby. "West as she goes," he told the pilot huskily. "For New Washington. And get me the Secretary-General on the radio."

"Yes, sir."

Piara Singh closed the door and came back. While the plane turned over the dark Atlantic, the three rat-terriers put their heads together.

In some cupboard toward the center of the Galaxy, the writing of the rat was waiting to be read.

—JAMES BLISH

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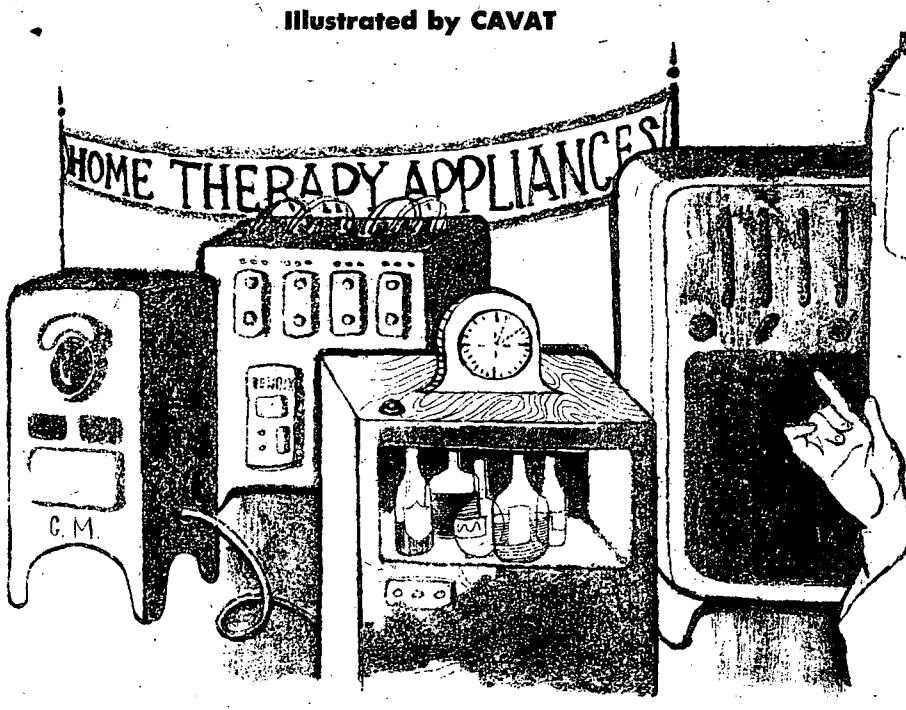
Bad

Give this robotic therapist a condition to cure and it did—always—even if it had to convert itself into a Typhoid Mary to do so!

Illustrated by CAVAT



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Medicine

By FINN O'DONNEVAN

ON MAY 2, 2103, Elwood Caswell walked rapidly down Broadway with a loaded revolver hidden in his coat pocket. He didn't want to use the weapon, but feared he might anyhow. This was a justifiable assumption, for Caswell was a homicidal maniac.

It was a gentle, misty spring day and the air held the smell of rain and blossoming dogwood. Caswell gripped the revolver in his sweaty right hand and tried to think of a single valid reason why he should not kill a man named Magnessen, who, the other day, had commented on how well Caswell looked.

What business was it of Magnessen's how he looked? Damned busybodies, always spoiling things for everybody. . .

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Caswell was a choleric little man with fierce red eyes, bulldog jowls and ginger-red hair. He was the sort you would expect to find perched on a detergent box, orating to a crowd of lunching businessmen and amused students, shouting, "Mars for the Martians, Venus for the Venusians!"

But in truth, Caswell was uninterested in the deplorable social conditions of extraterrestrials. He was a jetbus conductor for the New York Rapid Transit Corporation. He minded his own business. And he was quite mad.

Fortunately, he knew this at least part of the time, with at least half of his mind.

PERSPIRING FREELY, Caswell continued down Broadway toward the 43rd Street branch of Home Therapy Appliances, Inc. His friend Magnessen would be finishing work soon, returning to his little apartment less than a block from Caswell's. How easy it would be, how pleasant, to saunter in, exchange a few words and . . .

No! Caswell took a deep gulp of air and reminded himself that he didn't *really* want to kill anyone. It was not right to kill people. The authorities would lock him up, his friends wouldn't understand, his mother would never have approved.

But these arguments seemed pallid, over-intellectual and entirely without force. The simple fact remained—he wanted to kill Magnessen.

Could so strong a desire be wrong? Or even unhealthy?

Yes, it could! With an agonized groan, Caswell sprinted the last few steps into the Home Therapy Appliances Store.

Just being within such a place gave him an immediate sense of relief. The lighting was discreet, the draperies were neutral, the displays of glittering therapy machines were neither too bland nor obstreperous. It was the kind of place where a man could happily lie down on the carpet in the shadow of the therapy machines, secure in the knowledge that help for any sort of trouble was at hand.

A clerk with fair hair and a long, supercilious nose glided up softly, but not *too* softly, and murmured, "May one help?"

"Therapy!" said Caswell.

"Of course, sir," the clerk answered, smoothing his lapels and smiling winningly. "That is what we are here for." He gave Caswell a searching look, performed an instant mental diagnosis, and tapped a gleaming white-and-copper machine.

"Now this," the clerk said, "is the new Alcoholic Reliever, built by IBM and advertised in the

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leading magazines. A handsome piece of furniture, I think you will agree, and not out of place in any home. It opens into a television set."

With a flick of his narrow wrist, the clerk opened the Alcoholic Reliever, revealing a 52-inch screen.

"I need—" Caswell began.

"Therapy," the clerk finished for him. "Of course. I just wanted to point out that this model need never cause embarrassment for yourself, your friends or loved ones. Notice, if you will, the recessed dial which controls the desired degree of drinking. See? If you do not wish total abstinence, you can set it to heavy, moderate, social or light. That is a new feature, unique in mechanotherapy."

"I AM not a alcoholic," Caswell said, with considerable dignity. "The New York Rapid Transit Corporation does not hire alcoholics."

"Oh," said the clerk, glancing distrustfully at Caswell's bloodshot eyes. "You seem a little nervous. Perhaps the portable Bendix Anxiety Reducer—"

"Anxiety's not my ticket, either. What have you got for homicidal mania?"

The clerk pursed his lips. "Schizophrenic or manic-depressive origins?"

"I don't know," Caswell admitted, somewhat taken aback.

"It really doesn't matter," the clerk told him. "Just a private theory of my own. From my experience in the store, redheads and blonds are prone to schizophrenia, while brunettes incline toward the manic-depressive."

"That's interesting. Have you worked here long?"

"A week. Now then, here is just what you need, sir." He put his hand affectionately on a squat black machine with chrome trim.

"What's that?"

"That, sir, is the Rex Regenerator, built by General Motors. Isn't it handsome? It can go with any decor and opens up into a well-stocked bar. Your friends, family, loved ones need never know—"

"Will it cure a homicidal urge?" Caswell asked. "A *strong* one?"

"Absolutely. Don't confuse this with the little ten amp neurosis models. This is a hefty, heavy-duty, twenty-five amp machine for a really deep-rooted major condition."

"That's what I've got," said Caswell, with pardonable pride.

"This baby'll jolt it out of you. Big, heavy-duty thrust bearings! Oversize heat absorbers! Completely insulated! Sensitivity range of over—"

"I'll take it," Caswell said. "Right now. I'll pay cash."

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"Fine! I'll just telephone Storage and—"

"This one'll do," Caswell said, pulling out his billfold. "I'm in a hurry to use it. I want to kill my friend Magnessen, you know."

THE CLERK clucked sympathetically. "You wouldn't want to do that. . . Plus five per cent sales tax. Thank you, sir. Full instructions are inside."

Caswell thanked him, lifted the Regenerator in both arms and hurried out.

After figuring his commission, the clerk smiled to himself and lighted a cigarette. His enjoyment was spoiled when the manager, a large man impressively equipped with pince-nez, marched out of his office.

"Haskins," the manager said, "I thought I asked you to rid yourself of that filthy habit."

"Yes, Mr. Follansby, sorry, sir," Haskins apologized, snubbing out the cigarette. "I'll use the display Denicotinizer at once. Made rather a good sale, Mr. Follansby. One of the big Rex Regenerators."

"Really?" said the manager, impressed. "It isn't often we—wait a minute! You didn't sell the *floor model,* did you?"

"Why—why, I'm afraid I did, Mr. Follansby. The customer was in such a terrible hurry. Was there any reason—"

Mr. Follansby gripped his prominent white forehead in both hands, as though he wished to rip it off. "Haskins, I told you. I *must* have told you! That display Regenerator was a *Martian* model. For giving mechanotherapy to *Martians.*"

"Oh," Haskins said. He thought for a moment. "Oh."

Mr. Follansby stared at his clerk in grim silence.

"But does it really matter?" Haskins asked quickly. "Surely the machine won't discriminate. I should think it would treat a homicidal tendency even if the patient were not a Martian."

"The Martian race has never had the slightest tendency toward homicide. A Martian Regenerator doesn't even possess the concept. Of course the Regenerator will treat him. It has to. *But what will it treat?*"

"Oh, said Haskins.

"That poor devil must be stopped before—you say he was *homicidal?* I don't know what will happen! Quick, what is his address?"

"Well, Mr. Follansby, he was in such a terrible hurry—"

The manager gave him a long, unbelieving look. "Get the police! Call the General Motors Security Division! Find him!"

Haskins raced for the door.

"Wait!" yelled the manager, struggling into a raincoat. "I'm coming, too!"

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ELWOOD CASWELL returned to his apartment by taxicopter. He lugged the Regenerator into his living room, put it down near the couch and studied it thoughtfully.

"That clerk was right," he said after a while. "It *does* go with the room."

Esthetically, the Regenerator was a success.

Caswell admired it for a few more moments, then went into the kitchen and fixed himself a chicken sandwich. He ate slowly, staring fixedly at a point just above and to the left of his kitchen clock.

Damn you, Magnessen! Dirty no-good lying shifty-eyed enemy of all that's decent and clean in the world. . .

Taking the revolver from his pocket, he laid it on the table. With a stiffened forefinger, he poked it into different positions.

It was time to begin therapy.

Except that. . .

Caswell realized worriedly that he didn't want to lose the desire to kill Magnessen. What would become of him if he lost that urge? His life would lose all purpose, all coherence, all flavor and zest. It would be quite dull, really.

Moreover, he had a great and genuine grievance against Magnessen, one he didn't like to think about.

Irene!

His poor sister, debauched by the subtle and insidious Magnessen, ruined by him and cast aside. What better reason could a man have to take his revolver and. . .

Caswell finally remembered that he did not have a sister.

Now was *really* the time to begin therapy.

He went into the living room and found the operating instructions tucked into a ventilation louver of the machine. He opened them and read:

To Operate All Rex Model Regenerators:

1. Place the Regenerator near a comfortable couch. (A comfortable couch can be purchased as an additional accessory from any General Motors dealer.)

2. Plug in the machine.

3. Affix the adjustable contact band to the forehead.

And that's all! Your Regenerator will do the rest! There will be no language bar or dialect problem, since the Regenerator communicates by Direct Sense Contact (Patent Pending). All you must do is cooperate.

Try not to feel any embarrassment or shame. Everyone has problems and many are worse than yours! Your Regenerator has no interest in your morals or ethical standards, so don't feel it is 'judging' you. It desires only to aid you in becoming well and happy.

As soon as it has collected and

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processed enough data, your Regenerator will begin treatment. You make the sessions as short or as long as you like. You are the boss! And of course you can end a session at any time.

That's all there is to it! Simple, isn't it? Now plug in your General Motors Regenerator and GET SANE!

"NOTHING HARD about that," Cassidy said to himself. He pushed the Regenerator closer to the couch and plugged it in. He lifted the headband, started to slip it on, stopped.

"I feel so silly!" he giggled.

Abruptly he closed his mouth and stared pugnaciously at the black-and-chrome machine.

"So you think you can make me sane, huh?"

The Regenerator didn't answer.

"Oh, well, go ahead and try." He slipped the headband over his forehead, crossed his arms on his chest and leaned back.

Nothing happened. Caswell settled himself more comfortably on the couch. He scratched his shoulder and put the headband at a more comfortable angle. Still nothing. His thoughts began to wander.

Magnessen! You noisy, overbearing oaf, you disgusting—

"Good afternoon," a voice murmured in his head. "I am your mechanotherapist."

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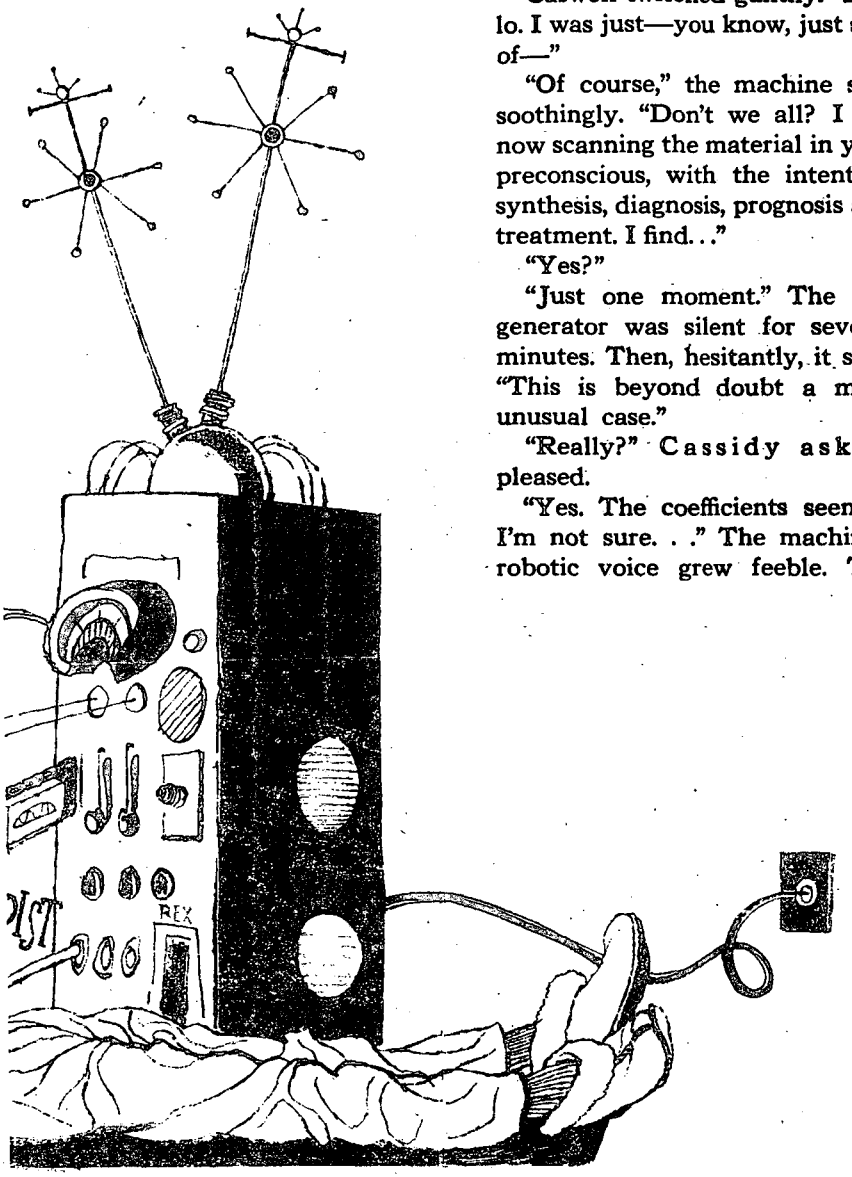

Caswell twitched guiltily. "Hello. I was just—you know, just sort of—"

"Of course," the machine said soothingly. "Don't we all? I am now scanning the material in your preconscious, with the intent of synthesis, diagnosis, prognosis and treatment. I find..."

"Yes?"

"Just one moment." The Regenerator was silent for several minutes. Then, hesitantly, it said, "This is beyond doubt a most unusual case."

"Really?" Cassidy asked, pleased.

"Yes. The coefficients seem—I'm not sure. . ." The machine's robotic voice grew feeble. The

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pilot light began to flicker and fade.

"Hey, what's the matter?"

"Confusion," said the machine. "Of course," it went on in a stronger voice, "the unusual nature of the symptoms need not prove entirely baffling to a competent therapeutic machine. A symptom, no matter how bizarre, is no more than a signpost, an indication of inner difficulty. And *all* symptoms can be related to the broad mainstream of proven theory. Since the theory is effective, the symptoms must relate. We will proceed on that assumption."

"Are you sure you know what you're doing?" asked Caswell, feeling light-headed.

THE MACHINE snapped back, its pilot light blazing, "Mechanotherapy today is an exact science and admits of no significant errors. We will proceed with a word-association test."

"Fire away," said Caswell.

"House?"

"Home."

"Dog?"

"Cat."

"Fleefl?"

Caswell hesitated, trying to figure out the word. It sounded vaguely Martian, but it might be Venusian or even—

"Fleefl?" the Regenerator repeated.

"Marfoosh," Caswell replied, making up the word on the spur of the moment.

"Loud?"

"Sweet."

"Green?"

"Mother."

"Thanagoyes?"

"Patamathonga.'

"Arrides?"

"Nexothesmodrastica."

"Chtheesnohelgnopteces?"

"Rigamaroo latasentricpropatria!" Caswell shot back. It was a collection of sounds he was particularly proud of. The average man would not have been able to pronounce them.

"Hmm," said the Regenerator. "The pattern fits. It always does."

"What pattern?'

"You have," the machine informed him, "a classic case of feem desire, c o m p l i c a t e d by strong dwarkish intentions."

"I do? I thought I was homicidal."

"That term has no referent," the machine said severely. "Therefore I must reject it as nonsense syllabification. Now c o n s i d e r these points: The feem desire is perfectly normal. Never forget that. But it is usually replaced at an early age by the hovendish revulsion. Individuals lacking in this basic environmental response—"

"I'm not absolutely sure I know what you're talking about," Caswell confessed.

"Please, sir! We must establish

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one thing at once. *You* are the patient. *I* am the mechanotherapist. You have brought your troubles to me for treatment. But you cannot expect help unless you cooperate."

"All right," Caswell said. "I'll try."

Up to now, he had been bathed in a warm glow of superiority. Everything the machine said had seemed mildly humorous. As a matter of fact, he had felt capable of pointing out a few things wrong with the mechanotherapist.

Now that sense of well-being evaporated, as it always did, and Caswell was alone, terribly alone and lost, a creature of his compulsions, in search of a little peace and contentment.

He would undergo anything to find them. Sternly he reminded himself that he had no right to comment on the mechanotherapist. These machines knew what they were doing and had been doing it for a long time. He would cooperate, no matter how outlandish the treatment seemed from his layman's viewpoint.

But it was obvious, Caswell thought, settling himself grimly on the couch, that mechanotherapy was going to be far more difficult than he had imagined.

THE SEARCH for the missing customer had been brief and useless. He was nowhere to be found on the teeming New York streets and no one could remember seeing a red-haired, red-eyed little man lugging a black therapeutic machine.

It was all too common a sight.

In answer to an urgent telephone call, the police came immediately, four of them, led by a harassed young lieutenant of detectives named Smith.

Smith just had time to ask, "Say, why don't you people put tags on things?" when there was an interruption.

A man pushed his way past the policeman at the door. He was tall and gnarled and ugly, and his eyes were deep-set and bleakly blue. His clothes, unpressed and uncaring, hung on him like corrugated iron.

"What do you want?" Lieutenant Smith asked.

The ugly man flipped back his lapel, showing a small silver badge beneath. "I'm John Rath, General Motors Security Division."

"Oh. . . Sorry, sir," Lieutenant Smith said, saluting. "I didn't think you people would move in so fast."

Rath made a noncommittal noise. "Have you checked for prints, Lieutenant? The customer might have touched some other therapy machine."

"I'll get right on it, sir," Smith said. It wasn't often that one of

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the operatives from GM, GE or IBM came down to take a personal hand. If a local cop showed he was really clicking, there just might be the possibility of an Industrial Transfer. . .

Rath turned to Follansby and Hoskins, and transfixed them with a gaze as piercing and as impersonal as a radar beam. "Let's have the full story," he said, taking a notebook and pencil from a shapeless pocket.

He listened to the tale in ominous silence. Finally he closed his notebook, thrust it back into his pocket and said, "The therapeutic machines are a sacred trust. To give a customer the wrong machine is a betrayal of that trust, a violation of the Public Interest, and a defamation of the Company's good reputation."

The manager nodded in agreement, glaring at his unhappy clerk.

"A Martian model," Rath continued, "should never have been on the floor in the first place."

"I can explain that," Follansby said hastily. "We needed a demonstrator model and I wrote to the Company, telling them—"

"This might," Rath broke in inexorably, "be considered a case of gross criminal negligence."

BOTH THE manager and the clerk exchanged horrified looks. They were thinking of the General Motors Reformatory outside of Detroit, where Company offenders passed their days in sullen silence, monotonously drawing micro-circuits for pocket television sets.

"However, that is out of my jurisdiction," Rath said. He turned his baleful gaze full upon Haskins. "You are certain that the customer never mentioned his name?"

"No, sir. I mean yes, I'm sure," Haskins replied rattledly.

"Did he mention any names at all?"

Haskins plunged his face into his hands. He looked up and said eagerly, "Yes! He wanted to kill someone! A friend of his!"

"Who?" Rath asked, with terrible patience.

"The friend's name was — let me think—Magneton! That was it! Magneton! Or was it Morrison? Oh, dear. . ."

Mr. Rath's iron face registered a rather corrugated disgust. People were useless as witnesses. Worse than useless, since they were frequently misleading. For reliability, give him a robot every time.

"Didn't he mention *anything* significant?"

"Let me *think!*" Haskins said, his face twisting into a fit of concentration.

Rath waited.

Mr. Follansby cleared his

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throat. "I was just thinking, Mr. Rath. About that Martian machine. It won't treat a Terran homicidal case as homicidal, will it?"

"Of course not. Homicide is unknown on Mars."

"Yes. But what will it do? Might it not reject the entire case as unsuitable? Then the customer would merely return the Regenerator with a complaint and we would—"

Mr. Rath shook his head. "The Rex Regenerator must treat if it finds evidence of psychosis. By Martian standards, the customer is a very sick man, a psychotic—*no matter what is wrong with him.*"

Follansby removed his pince-nez and polished them rapidly. "What will the machine do, then?"

"It will treat him for the Martian illness most analogous to his case: Feem desire, I should imagine, with various complications. As for what will happen once treatment begins, I don't know. I doubt whether anyone knows, since it has never happened before. Offhand, I would say there are two major alternatives: The patient may reject the therapy out of hand, in which case he is left with his homicidal mania unabated. Or he may accept the Martian therapy and reach a cure."

MR. FOLLANSBY'S face brightened. "Ah! A cure is possible!"

"You don't understand," Rath said. "He may affect a cure—*of his non-existent Martian psychosis.* But to cure something that is not there is, in effect, to erect a gratuitous delusional system. You might say that the machine would work in reverse, producing psychosis instead of removing it."

Mr. Follansby groaned and leaned against a Bell Psychosomatica.

"The result," Rath summed up, "would be to convince the customer that he was a Martian. A *sane* Martian, naturally."

Haskins suddenly shouted, "I remember! I remember now! He said he worked for the New York Rapid Transit Corporation! I remember distinctly!"

"That's a break," Rath said, reaching for the telephone.

Haskins wiped his perspiring face in relief. "And I just remembered something else that should make it easier still."

"What?"

"The customer said he had been an alcoholic at one time. I'm sure of it, because he was interested at first in the IBM Alcoholic Reliever, until I talked him out of it. He had red hair, you know, and I've had a theory for some time about red-headedness and alcoholism. It seems—"

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"Excellent," Rath said. "Alcoholism will be on his records. It narrows the search considerably."

As he dialed the NYRT Corporation, the expression on his craglike face was almost pleasant.

It was good, for a change, to find that a human *could* retain some significant facts.

"BUT SURELY you remember your goricae?" the Regenerator was saying.

"No," Caswell answered wearily.

"Tell me, then, about your juvenile experiences with the thorastrian fleep."

"Never had any."

"Hmm. Blockage," muttered the machine. "Resentment. Repression. Are you sure you don't remember your goricae and what it meant to you? The experience is universal."

"Not for me," Caswell said, swallowing a yawn.

He had been undergoing mechanotherapy for close to four hours and it struck him as futile. For a while, he had talked voluntarily about his childhood, his mother and father, his older brother. But the Regenerator had asked him to put aside those fantasies. The patient's relationships to an imaginary parent or sibling, it explained, were unworkable and of minor importance psychologically. The important thing was the patient's feelings—both revealed and repressed—toward his goricae.

"Aw, look," Caswell complained, "I don't even know what a goricae is."

"Of course you do. You just won't *let* yourself know."

"I don't know. Tell me."

"It would be better if you told me."

"How can I?" Caswell raged. "I don't know!"

"What do you *imagine* a goricae would be?"

"A forest fire," Caswell said. "A salt tablet. A jar of denatured alcohol. A small screwdriver. Am I getting warm? A notebook. A revolver—"

"These associations are meaningful," the Regenerator assured him. "Your attempt at randomness shows a clearly underlying pattern. Do you begin to recognize it?"

"What in hell is a goricae?" Caswell roared.

"The tree that nourished you during infancy, and well into puberty, if my theory about you is correct. Inadvertently, the goricate stifled your necessary rejection of the feem desire. This in turn gave rise to your present urge to dwark someone in a vlendish manner."

"No tree nourished *me*."

"You cannot recall the experience?"

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"Of course not. It never happened."

"You are sure of that?"

"Positive."

"Not even the tiniest bit of doubt?"

"No! No goricae ever nourished me. Look, I can break off these sessions at any time, right?"

"Of course," the Regenerator said. "But it would not be advisable at this moment. You are expressing anger, resentment, fear. By your rigidly summary rejection—"

"Nuts," said Caswell, and pulled off the headband.

THE SILENCE was wonderful. Caswell stood up, yawned, stretched and massaged the back of his neck. He stood in front of the humming black machine and gave it a long leer.

"You couldn't cure me of a common cold," he told it.

Stiffly he walked the length of the living room and returned to the Regenerator.

"Lousy fake!" he shouted.

Caswell went into the kitchen and opened a bottle of beer. His revolver was still on the table, gleaming dully.

Magnessen! You unspeakable treacherous filth! You fiend incarnate! You inhuman, hideous monster! Someone must destroy you, Magnessen! Someone . . .

Someone? He himself would have to do it. Only he knew the bottomless depths of Magnessen's depravity, his viciousness, his disgusting lust for power.

Yes, it was his duty, Caswell thought. But strangely, the knowledge brought him no pleasure.

After all, Magnessen was his friend.

He stood up, ready for action. He tucked the revolver into his right-hand coat pocket and glanced at the kitchen clock. Nearly six-thirty. Magnessen would be home now, gulping his dinner, grinning over his plans.

This was the perfect time to take him.

Caswell strode to the door, opened it, started through, and stopped.

A thought had crossed his mind, a thought so tremendously involved, so meaningful, so far-reaching in its implications that he was stirred to his depths. Caswell tried desperately to shake off the knowledge it brought. But the thought, permanently etched upon his memory, would not depart.

Under the circumstances, he could do only one thing.

He returned to the living room, sat down on the couch and slipped on the headband.

The Regenerator said, "Yes?"

"It's the damnedest thing," Caswell said, "but do you know, I think I *do* remember my goricae!"

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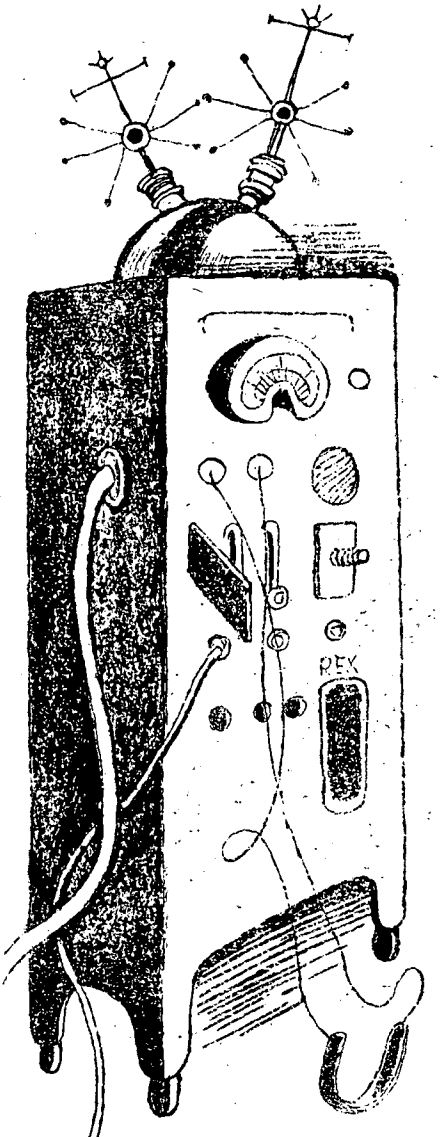

JOHN RATH contacted the New York Rapid Transit Corporation by televideo and was put into immediate contact with Mr. Bemis, a plump, tanned man with watchful eyes.

"Alocoholism?" Mr. Bemis repeated, after the problem was explained. Unobtrusively, he turned on his tape recorder. "Among *our* employees?" Pressing a button beneath his foot, Bemis alerted Transit Security, Publicity, Intercopany Relations and the Psychoanalysis Division. This done, he looked earnestly at Rath. "Not a chance of it, my dear sir. Just between us, why does General Motors *really* want to know?"

Rath smiled bitterly. He should have anticipated this. NYRT and GM had had their differences in the past. Officially, there was cooperation between the two giant corporations. But for all practical purposes —

"The question is in terms of the Public Interest," Rath said.

"Oh, certainly," Mr. Bemis replied, with a subtle smile. Glancing at his tattle board, he noticed that several company executives had tapped in on his line. This might mean a promotion, if handled properly.

"The Public Interest of GM," Mr. Bemis added with polite nastiness. "The insinuation is, I suppose, that drunken conductors are operating our jetbuses and helis?"

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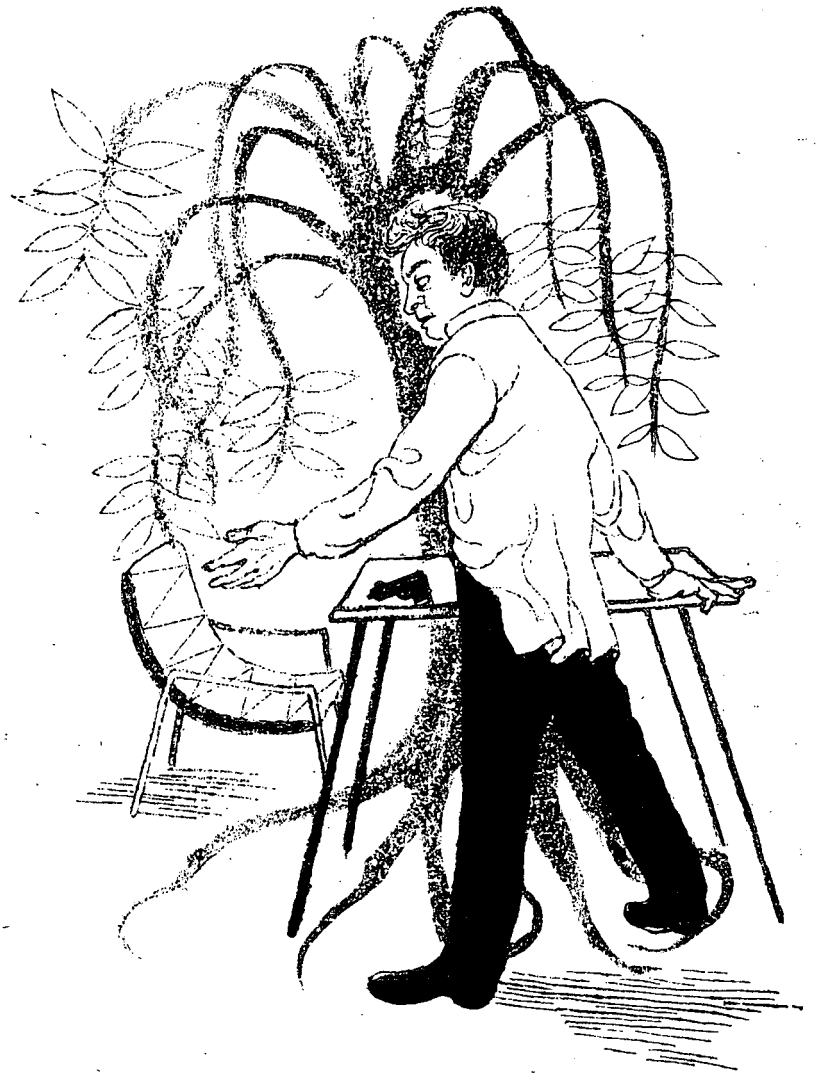

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"Of course not. I was searching for a single alcoholic predilection, an individual latency — "

"There's no possibility of it. We at Rapid Transit do not hire people with even the merest tendency in that direction. And may I suggest, sir, that you clean your own house before making implications about others?"

And with that, Mr. Bemis broke the connection.

No one was going to put anything over on *him*.

"Dead end," Rath said heavily. He turned and shouted, "Smith! Did you find any prints?"

Lieutenant Smith, his coat off and sleeves rolled up, bounded over. "Nothing usable, sir."

Rath's thin lips tightened. It had been close to seven hours since the customer had taken the Martian machine. There was no telling what harm had been done by now. The customer would be justified in bringing suit against the Company. Not that the money mattered much; it was the bad publicity that was to be avoided at all cost.

"Beg pardon, sir," Haskins said.

Rath ignored him. What next? Rapid Transit was not going to cooperate. Would the Armed Services make their records available for scansion by somatotype and pigmentation?

"Sir," Haskins said again.

"What is it?"

"I just remembered the customer's friend's name. It was Magnessen."

"Are you sure of that?"

"Absolutely," Haskins said, with the first confidence he had shown in hours. "I've taken the liberty of looking him up in the telephone book, sir. There's only one Manhattan listing under that name."

Rath glowered at him from under shaggy eyebrows. "Haskins, I hope you are not wrong about this. I sincerely hope that."

"I do too, sir," Haskins admitted, feeling his knees begin to shake.

"Because if you are," Rath said, "I will . . . Never mind. Let's go!"

BY POLICE escort, they arrived at the address in fifteen minutes. It was an ancient brownstone and Magnessen's name was on a second-floor door. They knocked.

The door opened and a stocky, crop-headed, shirt-sleeved man in his thirties stood before them. He turned slightly pale at the sight of so many uniforms, but held his ground.

"What is this?" he demanded.

"You Magnessen?" Lieutenant Smith barked.

"Yeah. What's the beef? If it's about my hi-fi playing too loud, I can tell you that old hag downstairs — "

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"May we come in?" Rath asked. "It's important."

Magnessen seemed about to refuse, so Rath pushed past him, followed by Smith, Follansby, Haskins and a small army of policemen. Magnessen turned to face them, bewildered, defiant and more than a little awed.

"Mr. Magnessen," Rath said, in the pleasantest voice he could muster, "I hope you'll forgive the intrusion. Let me assure you, it is in the Public Interest, as well as your own. Do you know a short, angry-looking, red-haired, red-eyed man?"

"Yes," Magnessen said slowly and warily.

Haskins let out a sigh of relief.

"Would you tell us his name and address?" asked Rath.

"I suppose you mean — hold it! What's he done?'

"Nothing."

"Then what you want him for?"

"There's no time for explanations," Rath said. "Believe me, it's in his own best interest, too. What is his name?"

Magnessen studied Rath's ugly, honest face, trying to make up his mind.

Lieutenant Smith said, "Come on, talk, Magnessen, if you know what's good for you. We want that name and we want it quick."

It was the wrong approach. Magnessen lighted a cigarette, blew smoke in Smith's direction and inquired, "You got a warrant, buddy?"

"You bet I have," Smith said, striding forward. "I'll warrant you, wise guy."

"Stop it!" Rath ordered. "Lieutenant Smith, thank you for your assistance. I won't need you any longer."

Smith left sulkily, taking his platoon with him.

Rath said, "I apologize for Smith's over-eagerness. You had better hear the problem." Briefly but fully, he told the story of the customer and the Martian therapeutic machine.

When he was finished, Magnessen looked more suspicious than ever. "You say he wants to kill *me?*"

"Definitely."

"That's a lie! I don't know what your game is, mister, but you'll never make me believe that. Elwood's my best friend. We been best friends since we was kids. We been in service together. Elwood would cut off his arm for me. And I'd do the same for him."

"Yes, yes," Rath said impatiently, "in a sane frame of mind, he would. But your friend Elwood — is that his first name or last?"

"First," Magnessen said tauntingly.

"Your friend Elwood is psychotic."

"You don't know him. That guy loves me like a brother. Look,

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what's Elwood really done? Defaulted on some payments or something? I can help out."

"You thick-headed imbecile!" Rath shouted. "I'm trying to save your life, and the life and sanity of your friend!"

"But how do I know?" Magnessen pleaded. "You guys come busting in here — "

"You must trust me," Rath said.

Magnessen studied Rath's face and nodded sourly. "His name's Elwood Caswell. He lives just down the block at number 341."

THE MAN who came to the door was short, with red hair and red-rimmed eyes. His right hand was thrust into his coat pocket. He seemed very calm.

"Are you Elwood Caswell?" Rath asked. "The Elwood Caswell who bought a Regenerator early this afternoon at the Home Therapy Appliances Store?"

"Yes," said Caswell. "Won't you come in?"

Inside Caswell's small living room, they saw the Regenerator, glistening black and chrome, standing near the couch. It was unplugged.

"Have you used it?" Rath asked anxiously.

"Yes."

Follansby stepped forward. "Mr. Caswell, I don't know how to explain this, but we made a terrible mistake. The Regenerator you took was a Martian model — for giving therapy to Martians."

"I know," said Caswell.

"You do?"

"Of course. It became pretty obvious after a while."

"It was a dangerous situation," Rath said. "Especially for a man with your — ah — troubles." He studied Caswell covertly. The man seemed fine, but appearances were frequently deceiving, especially with psychotics. Caswell had been homicidal; there was no reason why he should not still be.

And Rath began to wish he had not dismissed Smith and his policemen so summarily. Sometimes an armed squad was a comforting thing to have around.

Caswell walked across the room to the therapeutic machine. One hand was still in his jacket pocket; the other he laid affectionately upon the Regenerator.

"The poor thing tried its best," he said. "Of course, it couldn't cure what wasn't there." He laughed. "But it came very near succeeding!"

RATH STUDIED Caswell's face and said, in a trained casual tone, "Glad there was no harm, sir. The Company will, of course, reimburse you for your lost time and for your mental anguish — "

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"Naturally," Caswell said.

" — and we will substitute a proper Terran Regenerator at once."

"That won't be necessary."

"It *won't?*"

"No." Caswell's voice was decisive. "The machine's attempt at therapy forced me into a complete self-appraisal. There was a moment of absolute insight, during which I was able to evaluate and discard my homicidal intentions toward poor Magnessen."

Rath nodded dubiously. "You feel no such urge now?"

"Not in the slightest."

Rath frowned deeply, started to say something, and stopped. He turned to Follansby and Haskins. "Get that machine out of here. I'll have a few things to say to you at the store."

The manager and the clerk lifted the Regenerator and left.

Rath took a deep breath. "Mr. Caswell, I would strongly advise that you accept a new Regenerator from the Company, gratis. Unless a cure effected in a proper mechanotherapeutic manner, there is always the danger of a setback."

"No danger with me," Caswell said, airily but with deep conviction. "Thank you for your consideration, sir. And good night."

Rath shrugged and walked to the door.

"Wait!" Caswell called.

Rath turned. Caswell had taken his hand out of his pocket. In it was a revolver. Rath felt sweat trickle down his arms. He calculated the distance between himself and Caswell. Too far.

"Here," Caswell said, extending the revolver butt-first. "I won't need this any longer."

Rath managed to keep his face expressionless as he accepted the revolver and stuck it into a shapeless pocket.

"Good night," Caswell said. He closed the door behind Rath and bolted it.

At last he was alone.

Caswell walked into the kitchen. He opened a bottle of beer, took a deep swallow and sat down at the kitchen table. He stared fixedly at a point just above and to the left of the clock.

He had to form his plans now. There was no time to lose.

Magnessen! That inhuman monster who cut down the Caswell goricae! Magnessen! The man who, even now, was secretly planning to infect New York with the abhorrent feem desire! Oh, Magnessen, I wish you a long, long life, filled with the torture I can inflict on you. And to start with . . .

Caswell smiled to himself as he planned exactly how he would dwark Magnessen in a vlendish manner.

— FINN O'DONNEVAN

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All the things you are

By ROBERT SHECKLEY

Nothing was simpler than the First Contact Code . . . "Monkey See, Monkey Do" . . . and it was Man who had to be the monkey!

Illustrated By SMITH

THERE ARE regulations to govern the conduct of First Contact spaceships, rules drawn up in desperation and followed in despair, for what rule can predict the effect of *any* action upon the mentality of an alien people?

Jan Maarten was gloomily pondering this as he came into the atmosphere of Durell IV. He was a big, middle-aged man with thin ash-blond hair and a round worried face. Long ago, he had concluded that almost any rule was better than none. Therefore he followed his meticulously, but with an ever-present sense of uncertainty and human fallibility.

These were ideal qualifications for the job of First Contacter.

He circled the planet, low enough for observation, but not too low, since he didn't want to

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frighten the inhabitants. He noted the signs of a primitive-pastoral civilization and tried to remember everything he had learned in Volume 4, *Projected Techniques for First Contact on So-called Primitive-pastoral Worlds*, published by the Department of Alien Psychology. Then he brought the ship down on a rocky, grass-covered plain, near a typical medium-sized village, but not *too* near, using the Silent Sam landing technique.

"Prettily done," commented Croswell, his assistant, who was too young to be bothered by uncertainties.

Chedka, the Eborian linguist, said nothing. He was sleeping, as usual.

Maarten grunted something and went to the rear of the ship to run his tests. Croswell took up his post at the viewport.

"HERE THEY come," Croswell reported half an hour later. "About a dozen of them, definitely humanoidal." Upon closer inspection, he saw that the natives of Durell were flabby, dead-white in coloration and deadpan in expression. Croswell hesitated, then added, "They're not too handsome."

"What are they doing?" Maarten asked.

"Just looking us over," Croswell said. He was a slender young man with an unusually large and lustrous mustache which he had grown on the long journey out from Terra. He stroked it with the pride of a man who has been able to raise a really good mustache.

"They're about twenty yards from the ship now," Croswell reported. He leaned forward, flattening his nose ludicrously against the port, which was constructed of one-way glass.

Croswell could look out, but no one could look in. The Department of Alien Psychology had ordered the change last year, after a Department ship had botched a first contact on Carella II. The Carellans had stared into the ship, become alarmed at something within, and fled. The Department still didn't know what had alarmed them, for a second contact had never been successfully established.

That mistake would never happen again.

"What now?" Maarten called.

"One of them's coming forward alone. Chief, perhaps. Or sacrificial offering."

"What is he wearing?"

"He has on a—a sort of—will you kindly come here and look for yourself?"

Maarten, at his instrument bank, had been assembling a sketchy picture of Durell. The planet had a breathable atmos-

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phere, an equitable climate, and gravity comparable to that of Earth. It had valuable deposits of radioactives and rare metals. Best of all, it tested free of the virulent micro-organisms and poisonous vapors which tended to make a Contacter's life feverishly short.

Durell was going to be a valuable neighbor to Earth, provided the natives were friendly — and the Contacters skillful.

MAARTEN WALKED to the viewport and studied the natives. "They are wearing pastel clothing. *We* shall wear pastel clothing."

"Check," said Croswell.

"They are unarmed. *We* shall go unarmed."

"Roger."

"They are wearing sandals. We shall wear sandals as well."

"To hear is to obey."

"I notice they have no facial hair," Maarten said, with the barest hint of a smile. "I'm sorry, Ed, but that mustache—"

"Not my mustache!" Croswell yelped, quickly putting a protective hand over it.

"I'm afraid so."

"But, Jan, I've been six months raising it!"

"It has to go. That should be obvious."

"I don't see why," Croswell said indignantly.

"Because first impressions are *vital*. When an unfavorable first impression has been made, subsequent contacts become difficult, sometimes impossible. Since we know nothing about these people, conformity is our safest course. We try to look like them, dress in colors that are pleasing, or at least acceptable to them, copy their gestures, interact within their framework of acceptance, endeavor in every way—"

"All right, all right," Croswell said. "I suppose I can grow another on the way back."

They looked at each other; then both began laughing. Croswell had lost three mustaches in this manner.

While Croswell shaved, Maarten stirred their linguist into wakefulness. Chedka was a lemurlike humanoid from Eboria IV, one of the few planets where Earth maintained successful relations. The Eborians were natural linguists, aided by the kind of associative ability found in nuisances who supply words in conversation — only the Eborians were always right. They had wandered over a considerable portion of the Galaxy in their time and might have attained quite a place in it were it not that they needed twenty hours' sleep out of twenty-four.

Croswell finished shaving and dressed in pale green coveralls

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and sandals. All three stepped through the degermifier. Maarten took a deep breath, uttered a silent prayer and opened the port.

A low sigh went up from the crowd of Durellans, although the chief — or sacrifice — was silent. They were indeed humanlike, if one overlooked their pallor and the gentle sheeplike blandness of their feaures — features upon which Maarten could read no trace of expression.

"Don't use any facial contortions," Maarten warned Croswell.

Slowly they advanced until they were ten feet from the leading Durellan. Then Maarten said in a low voice, "We come in peace."

CHEDKA TRANSLATED, then listend to the answer, which was so soft as to be almost undecipherable.

"Chief says welcome," Chedka reported in his economical English.

"Good, good," Maarten said. He took a few more steps forward and began to speak, pausing every now and then for translation. Earnestly, and with extreme conviction, he intoned Primary Speech BB-32 (for humanoid, primitive - pastoral, tentatively non-aggressive aliens).

Even Croswell, who was impressed by very little, had to admit it was a fine speech. Maarten said they were wanderers from afar, come out of the Great Nothingness to engage in friendly discourse with the gentle people of Durell. He spoke of green and distant Earth, so like this planet, and of the fine and humble people of Earth who stretched out hands in greeting. He told of the great spirit of peace and cooperation that emanated from Earth, of universal friendship, and many other excellent things.

Finally he was done. There was a long silence.

"Did he understand it all?" Maarten whispered to Chedka.

The Eborian nodded, waiting for the chief's reply. Maarten was perspiring from the exertion and Croswell couldn't stop nervously fingering his newly shaven upper lip.

The chief opened his mouth, gasped, made a little half turn, and collapsed to the ground.

It was an embarrassing moment and one uncovered by any amount of theory.

The chief didn't rise; apparently it was not a ceremonial fall. As a matter of fact, his breathing seemed labored, like that of a man in a coma.

Under the circumstances, the Contact team could only retreat to their ship and await further developments.

Half an hour later, a native approached the ship and conversed

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with Chedka, keeping a wary eye on the Earthmen and departing immediately.

"What did he say?" Croswell asked.

"Chief Moréri apologizes for fainting," Chedka told them. "He said it was inexcusably bad manners."

"Ah!" Maarten exclaimed. "His fainting might help us, after all — make him eager to repair his 'impoliteness.' Just as long as it was a fortuitous circumstance, unrelated to us —"

"Not," Chedka said.

"Not what?"

"Not unrelated," the Eborian said, curling up and going to sleep.

MAARTEN SHOOK the little linguist awake. "What else did the chief say? How was his fainting related to us?"

Chedka yawned copiously. "The chief was very embarrassed. He faced the wind from your mouth as long as he could, but the alien odor — "

"My breath?" Maarten asked. "My *breath* knocked him out?"

Chedka nodded, giggled unexpectedly and went to sleep.

Evening came, and the long dim twilight of Durell merged imperceptibly into night. In the village, cooking fires glinted through the surrounding forest and winked out one by one. But lights burned within the spaceship until dawn. And when the sun rose, Chedka slipped out of the ship on a mission into the village. Croswell brooded over his morning coffee, while Maarten rummaged through the ship's medicine chest.

"It's purely a temporary setback," Croswell was saying hopefully. "Little things like this are bound to happen. Remember that time on Dingoforeaba VI — "

"It's little things that close planets forever," Maarten said.

"But how could anyone possibly guess — "

"I should have foreseen it," Maarten growled angrily. "Just because our breath hasn't been offensive anywhere else — here it is!"

Triumphantly he held up a bottle of pink tablets. "Absolutely guaranteed to neutralize any breath, even that of a hyena. Have a couple."

Croswell accepted the pills. "Now what?"

"Now we wait until — aha! What did he say?"

Chedka slipped through the entry port, rubbing his eyes. "The chief apologizes for fainting."

"We know that. What else?"

"He welcomes you to the village of Lannit at your convenience. The chief feels that this incident shouldn't alter the course of friendship between two peace-

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loving courteous peoples."

Maarten sighed with relief. He cleared his throat and asked hesitantly, "Did you mention to him about the forthcoming — ah — improvement in our breaths?"

"I assured him it would be corrected," Chedka said, "although it never bothered *me*."

"Fine, fine. We will leave for the village now. Perhaps you should take one of these pills?"

"There's nothing wrong with *my* breath," the Eborian said complacently.

They set out at once for the village of Lannit.

WHEN ONE deals with a primitive-pastoral people, one looks for simple but highly symbolic gestures, since that is what they understand best. Imagery! Clear-cut and decisive parallels! Few words but many gestures! Those were the rules in dealing with primitive-pastorals.

As Maarten approached the village, a natural and highly symbolic ceremony presented itself. The natives were waiting in their village, which was in a clearing in the forest. Separating forest from village was a dry stream bed, and across that bed was a small stone bridge.

Maarten advanced to the center of the bridge and stopped, beaming benignly on the Durellans. When he saw several of them shudder and turn away, he smoothed out his features, remembering his own injunction on facial contortions. He paused for a long moment.

"What's up?" Croswell asked, stopping in front of the bridge.

In a loud voice, Maarten cried, "Let this bridge symbolize the link, now eternally forged, that joins this beautiful planet with—" Croswell called out a warning, but Maarten didn't know what was wrong. He stared at the villagers; they had made no movement.

"Get off the bridge!" Croswell shouted. But before Maarten could move, the entire structure had collapsed under him and he fell bone-shakingly into the dry stream.

"Damnedest thing I ever saw," Croswell said, helping him to his feet. "As soon as you raised your voice, that stone began to pulverize. Sympathetic vibration, I imagine."

Now Maarten understood why the Durellans spoke in whispers. He struggled to his feet, then groaned and sat down again.

"What's wrong?" Croswell asked.

"I seem to have wrenched my ankle," Maarten said miserably.

Chief Moréri came up, followed by twenty or so villagers, made a short speech and presented Maarten with a walking

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stick of carved and polished black wood.

"Thanks," Maarten muttered, standing up and leaning gingerly on the cane. "What did he say?" he asked Chedka.

"The chief said that the bridge was only a hundred years old and in good repair," Chedka translated. "He apologizes that his ancestors didn't build it better."

"Hmm," Maarten said.

"And the chief says that you are probably an unlucky man."

He might be right, Maarten thought. Or perhaps Earthmen were just a fumbling race. For all their good intentions, population after population feared them, hated them, envied them, mainly on the basis of unfavorable first impressions.

Still, there seemed to be a chance here. What else could go wrong?

Forcing a smile, then quickly erasing it, Maarten limped into the village beside Moréri.

TECHNOLOGICALLY, the Durellan civilization was of a low order. A limited use had been made of wheel and lever, but the concept of mechanical advantage had been carried no further. There was evidence of a rudimentary knowledge of plane geometry and a fair idea of astronomy.

Artistically, however, the Durellans were adept and surprisingly sophisticated, particularly in wood carving. Even the simplest huts had bas-relief panels, beautifully conceived and executed.

"Do you think I could take some photographs?" Croswell asked.

"I see no reason why not," Maarten said. He ran his fingers lovingly over a large panel, carved of the same straight-grained black wood that formed his cane. The finish was as smooth as skin beneath his fingertips.

The chief gave his approval and Croswell tooks photographs and tracings of Durellan home, market and temple decorations.

Maarten wandered around, gently touching the intricate bas-reliefs, speaking with some of the natives through Chedka, and generally sorting out his impressions.

The Durelleans, Maarten judged, were highly intelligent and had a potential comparable to that of *Homo sapiens*. Their lack of a defined technology was more the expression of a cooperation with nature rather than a flaw in their makeup. They seemed inherently peace-loving and non-aggressive — valuable neighbors for an Earth that, after centuries of confusion, was striving toward a similar goal.

This was going to be the basis

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of his report to the Second Contact Team. With it, he hoped to be able to add, *A favorable impression seems to have been left concerning Earth. No unusual difficulties are to be expected.*

Chedka had been talking earnestly with Chief Moréri. Now, looking slightly more wide awake than usual, he came over and conferred with Maarten in a hushed voice. Maarten nodded, keeping his face expressionless, and went over to Croswell, who was snapping his last photographs.

"All ready for the big show?" Maarten asked.

"What show?"

"Moréri is throwing a feast for us tonight," Maarten said. "Very big, very important feast. A final gesture of good will and all that." Although his tone was casual, there was a gleam of deep satisfaction in his eyes.

Croswell's reaction was more immediate. "Then we've made it! The contact is successful!"

Behind him, two natives shook at the loudness of his voice and tottered feebly away.

"We've made it," Maarten whispered, "if we watch our step. They're a fine, understanding people — but we *do* seem to grate on them a bit."

BY EVENING, Maarten and Croswell had completed a chemical examination of the Durellan foods and found nothing harmful to humans. They took several more pink tablets, changed coveralls and sandals, bathed again in the degermifier, and proceeded to the feast.

The first course was an orange-green vegetable that tasted like squash. Then Chief Moréri gave a short talk on the importance of intercultural relations. They were served a dish resembling rabbit and Croswell was called upon to give a speech.

"Remember," Maarten whispered, *"whisper!"*

Croswell stood up and began to speak. Keeping his voice down and his face blank, he began to enumerate the many similarities between Earth and Durell, depending mainly on gestures to convey his message.

Chedka translated. Maarten nodded his approval. The chief nodded. The feasters nodded.

Croswell made his last points and sat down. Maarten clapped him on the shoulder. "Well done, Ed. You've got a natural gift for — what's wrong?"

Croswell had a startled and incredulous look on his fact. "Look!"

Maarten turned. The chief and the feasters, their eyes open and staring, were still nodding.

"Chedka!" Maarten whispered. "Speak to them!"

The Eborian asked the chief a

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question. There was no response. The chief continued his rhythmic nodding.

"Those gestures!" Maarten said. "You must have hypnotized them!" He scratched his head, then coughed once, loudly. The Durellans stopped nodding, blinked their eyes and began to talk rapidly and nervously among themselves.

"They say you've got some strong powers," Chedka translated at random. "They say that aliens are pretty queer people and doubt if they can be trusted."

"What does the chief say?" Maarten asked.

"The chief believes you're all right. He is telling them that you meant no harm."

"Good enough. Let's stop while we're ahead."

He stood up, followed by Croswell and Chedka.

"We are leaving now," he told the chief in a whisper, "but we beg permission for others of our kind to visit you. Forgive the mistakes we have made; they were due only to ignorance of your ways."

CHEDKA TRANSLATED, and Maarten went on whispering, his face expressionless, his hands at his sides. He spoke of the oneness of the Galaxy, the joys of cooperation, peace, the exchange of goods and art, and the essential solidarity of all human life.

Moréri, though still a little dazed from the hypnotic experience, answered that the Earthmen would always be welcome.

Impulsively, Croswell held out his hand. The chief looked at it for a moment, puzzled, then took it, obviously wondering what to do with it and why.

He gasped in agony and pulled his hand back. They could see deep burns blotched red against his skin.

"What could have — "

"Perspiration!" Maarten said. "It's an acid. Must have an almost instantaneous effect upon their particular makeup. Let's get out of here."

The natives were milling together and they had picked up some stones and pieces of wood. The chief, although still in pain, was arguing with them, but the Earthmen didn't wait to hear the results of the discussion. They retreated to their ship, as fast as Maarten could hobble with the help of his cane.

The forest was dark behind them and filled with suspicious movements. Out of breath, they arrived at the spaceship. Croswell, in the lead, sprawled over a tangle of grass and fell headfirst against the port with a resounding clang.

"Damn!" he howled in pain.

The ground rumbled beneath

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them, began to tremble and slide away.

"Into the ship!" Maarten ordered.

They managed to take off before the ground gave way completely.

"IT MUST have been sympathetic vibration again," Croswell said, several hours later, when the ship was in space. "But of all the luck — to be perched on a rock fault!"

Maarten sighed and shook his head. "I really don't know what to do. I'd like to go back, explain to them but — "

"We've outlived our welcome," Croswell said.

"Apparently. Blunders, nothing but blunders. We started out badly, and everything we did made it worse."

"It is not what you *do*," Chedka explained in the most sympathetic voice they had ever heard him use. "It's not your fault. It's what you *are*."

Maarten considered that for a moment. "Yes, you're right. Our voices shatter their land, our expressions disgust them, our gestures hypnotize them, our breath asphyxiates them, our perspiration burns them. Oh, Lord!"

"Lord, Lord," Croswell agreed glumly. "We're living chemical factories — only turning out poison gas and corrosives exclusively."

"But that is not *all* you are," Chedka said. "Look."

He held up Maarten's walking stick. Along the upper part, where Maarten had handled it, long-dormant buds had burst into pink and white flowers, and their scent filled the cabin.

"You see?" Chedka said. "You are *this*, also."

"That stick was dead," Croswell mused. "Some oil in our skin, I imagine."

Maarten shuddered. "Do you suppose that all the carvings we touched — the huts — the temple — "

"I should think so," Croswell said.

Maarten closed his eyes and visualized it, the sudden bursting into bloom of the dead, dried wood.

"I think they'll understand," he said, trying very hard to believe himself. "It's a pretty symbol and they're quite an understanding people. I think they'll approve of — well, at least some of the things we are."

— ROBERT SHECKLEY

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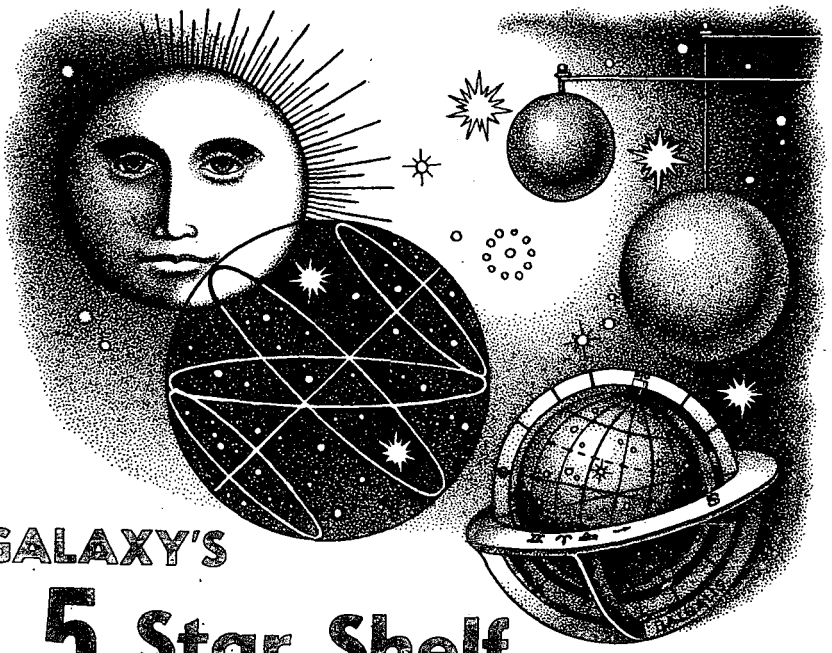

GALAXY'S 5 Star Shelf

THE DRAGON IN THE SEA by Frank Herbert. Doubleday and Co., Inc., $2.95

THIS is a dramatically fascinating story of undersea warfare of the future by a comparative newcomer to the field, but I doubt if there is any established writer who would not be tickled to claim this tense and well-written novel as his own.

It concerns the mission of an American subtug to get through the Eastern Powers' defensive cordon around Europe in order to pirate desperately needed oil from a secret American-drilled well off the coast of Norway, about which the enemy knows nothing.

In spite of their ignorance of the well, the EP subs have managed to sink twenty out of twenty subtugs and their mile-long tows. Obviously they have something that the Allies don't and that might turn out to be "sleepers" or turncoats.

It is put squarely in the lap of a BuPsych Ensign, schooled in electronics, to take over as Electronics Officer of a four-man subtug in order to prevent a neurotic

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crackup of the unstable skipper, police the crew to prevent sabotage and to bring back information concerning enemy espionage methods.

This yarn from *Astounding S-F* is the odyssey of the *Fenian Ram* and a gripping tale it is.

SCIENCE-FICTION ADVENTURE IN MUTATION, edited by Groff Conklin. The Vanguard Press, Inc., $3.75

BY LATEST count, this is number five in Conklin's "idea" series of anthologies. Unlike many rival anthologists, Conklin makes a concerted effort within the framework of his "idea" to give his audience as wide a selection as possible, at times even straying slightly beyond the limits, if story quality warrants.

It would not be true to report that the average for the collection runs A#1, but it certainly does better than B-plus. And it's good to see old-timers like Miles J. Breuer and S. Fowler Wright represented, the latter with a yarn written for the anthology.

CITIZEN IN SPACE by Robert Sheckley. Ballantine Books, Inc., 35c

BALLANTINE'S second collection of Sheckley short stories shows the same unique approach to standard s-f plots as his first entry. An even dozen stories make up the book and GALAXY can proudly claim half.

Remember "Hunting Problem," which takes an old chestnut of a plot: Man on a hostile new planet turning out to be quarry instead of hunter? Make The Hunter an immature Scout of the Brave Bison Patrol going after the skins of bull Mirashes (Man) for his Scout Badge, endow him with the fantastic abilities of his incredibly advanced race, and you have a good idea of the ingredients Sheckley uses in whipping up a tasty yarn.

And how about "Skulking Permit," concerning an isolated Earth colony which no longer has such proven items of civilization as a Jail, Post Office, Little Red Schoolhouse or even a Thief? With an imminent visit from Earth officials pending, who will be the Town Thief?

The quality is not uniform — whose is? — but very high in inventiveness, ingenuity and reader appeal.

THE BEST SCIENCE FICTION STORIES AND NOVELS, 1955, edited by T. E. Dikty. Frederick Fell, $4.50

NUMBER ten in the annual "Year's Best" collection is right up in the same qualitative

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category with its worthy forebears, even though Dikty is carrying along without Bleiler, strange as that may sound to the ear after all these years.

The selection of stories is large — twenty, including two novellas, ranging from good to very good, although two could very well have been omitted.

An excellent feature of the book is the Science Fiction Book Index, a complete compilation of all publications of 1954, assembled by Earl Kemp. Both the novellas, "Exile" by Everett B. Cole and "Nightmare Blues" by Frank Herbert who also wrote Dragon in the Sea, reviewed this month, appeared in *Astounding S-F* and are well worth reading.

A big (over 500 pages) bargain, both in size and quality.

ALTERNATING CURRENTS by Frederik Pohl. Ballantine Books, Inc., 35c

SCIENCE fiction fans owe a debt of gratitude to Pohl for giving up his authors' agency and concentrating on full-time writing. This volume is a case in point to demonstrate his considerable versatility. It ranges from the horror of "Let The Ants Try" through the whimsical fantasy of "Grandy Devil" to the farcical "What To Do Until The Analyst Comes."

Readers of this magazine will remember the two longer works in the book. They are "The Mapmakers," a highly inventive yarn about a lost galactic charting expedition with only a blinded navigator to rely on to get them home, and the disturbing mood-provocative "Tunnel Under The World" with its wallop ending. A must for anyone who enjoys the maturing of a talent.

ON THE NATURE OF MAN by Dagobert D. Runes. Philosophical Library, $3.00

THIS is a straight philosophical essay, but I have included it in this month's column because of the intriguing ideas of the author concerning prehistoric Man. I have never seen elsewhere the visualization of early Man as a berry-picking, nut-eating vegetarian.

According to Dr. Runes, Man never tasted meat until his intellect developed to the tool-making level, at which time he changed from a defensive animal to an omnivore.

Is it possible that H. G. Wells in his classic *A Story of the Stone Age* could have been that far off the beam?

A GALLERY OF SCIENTISTS by Rufus Suter. Vantage Press, $3.00

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LAST month's *Men, Microscopes and Living Things*, which also began with Aristotle, set down personal details of the lives of ten scientists for the edification of the young reader.

This tome, which also concerns itself primarily with ten, approaches them through their influence on their contemporaries and, more important, on their impact on the world of their tomorrows.

No juvenile this, but an adult, scholarly study presented in an easy style.

TALES OF CONAN by Robert E. Howard and L. Sprague de Camp. Gnome Press, $3.00

THIS is the sixth in the Conan series, which threatens never to end. Even though R. E. Howard died approximately two decades ago, it appears that "hitherto unpublished manuscripts" keep coming to view.

In this instance, four unrelated adventures have been woven by L. Sprague de Camp into the Conan saga. Action and blood there are aplenty in the good old tradition and Howard fans will find exciting reading. As for me, I think de Camp did a remarkable job when he tossed his inhibitions to the wind and out-Conaned Conan in his own *Tritonian Ring* of a few years back.

STAR SHIP ON SADDLE MOUNTAIN by Atlantis Hallam. The Macmillan Co., $2.50

NOW *there's* a sure-fire title for a juvenile if I ever saw one! Fortunately, the story lives up to its promise as it tells of Charley Holt, an orphaned youngster, and his horse Navajo, and their experiences with the strange ship that landed between the humps of Saddle Mountain. The tale is particularly tense in the first half after Charley has made his discovery of the ship and its strange occupants and attempts to avoid capture. The fact that he doesn't and suffers incarceration on another planet as a result makes for an exciting book for teenagers.

MUSIC FROM OUT OF SPACE by Harry Revel. M-G-M Records

I DON'T believe this column has ever reviewed a record before, but what S-F addict could overlook an item with such a title as this? It must be admitted that this pleasantly listenable album is considerably more reminiscent of *Here Comes Mr. Jordan* than it is of H. P. Lovecraft's *"Colour out of Space"* in flavor, but Hollywood's ethereal choirs sound pretty good on wax as well.

—FLOYD C. GALE

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Horrer Howce

By MARGARET ST. CLAIR

Atroshus speling, eh? Laff it off and what'll be more atroshusly parsed is—you!

DICKSON-HAWES' face had turned a delicate pea-green. He closed the shutter on the opening very quickly indeed. Nonetheless, he said in nearly his usual voice, "I'm afraid it's a trifle literary, Freeman. Reminds of that thing of Yeats' — 'What monstrous, beast, Its time come, uh, round again, slouches toward Bethlehem to be born?' But the people who go to a horror house for amusement aren't literary. It wouldn't affect them they way it did me." He giggled nervously.

No answering emotion disturbed the normal sullenness of Freeman's face. "I thought there was a nice feel to it," he said obstinately. "I wouldn't have put so much time in on this stuff unless I thought you'd be interested. Research is more my line. I could have made a lot more money working on one of the government projects."

"You didn't have much choice, did you?" Dickson-Hawes said pleasantly. "A political past is such a handicap, unless one's willing to risk prosecution for perjury."

"I'm as loyal as anybody! For

Illustrated By SMITH

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the last five years — eight, ten — all I've wanted to do was make a little cash. The trouble is, I always have such rotten luck."

"Um." Dickson-Hawes wiped his forehead unobtrusively. "Well, about your little effort. There are some nice touches, certainly. The idea of the monstrous womb, alone on the seashore, slowly swelling, and . . ." In the folds of his handkerchief, he stifled a sort of cough. "No, I'm afraid it's too poetic. I can't use it, old chap."

The two men moved away from the shuttered opening. Freeman said, "Then Spring Scene is the only one you're taking?"

"Of those of yours I've seen. It's horrid enough, but not too horrid. Haven't you anything else?" Dickson-Hawes' voice was eager, but eagerness seemed to be mixed with other things — reluctance, perhaps, and the fear of being afraid.

FREEMAN FINGERED his lower lip. "There's the Well," he said after a moment. "It needs a little more work done on it, but — I guess you could look at it."

"I'd be delighted to," Dickson-Hawes agreed heartily. "I do hope you understand, old man, that there's quite a lot of *money* involved in this."

"Yeah. You've really got the capital lined up? Twice before, you were sure you had big money interested. But the deals always fell through. I got pretty tired of it."

"This time it's different. The money's already in escrow, not to mention what I'm putting in myself. We intend a coast-to-coast network of horror houses in every gayway, playland and amusement park."

"Yeah. Well, come along."

They went down the corridor to another door. Freeman unlocked it. "By the way," he said, "I'd appreciate it if you'd keep your voice down. Some of the machinery in this stuff's — delicate. Sensitive."

"By all means. Of course."

They entered. To their right was an old brick house, not quite in ruin. To the left, a clump of blackish trees cut off the sky. Just in front of them was the moss-covered coping of an old stone well. The ground around the well was slick with moisture.

Dickson-Hawes sniffed appreciatively. "I must say you've paid wonderful attention to detail. It's exactly like being out of doors. It even smells froggy and damp."

"Thanks," Freeman replied with a small, dour smile.

"What happens next?"

"Look down in the well."

Rather g i n g e r l y, Dickson-Hawes approached. He leaned over. From the well came a gurgling splash.

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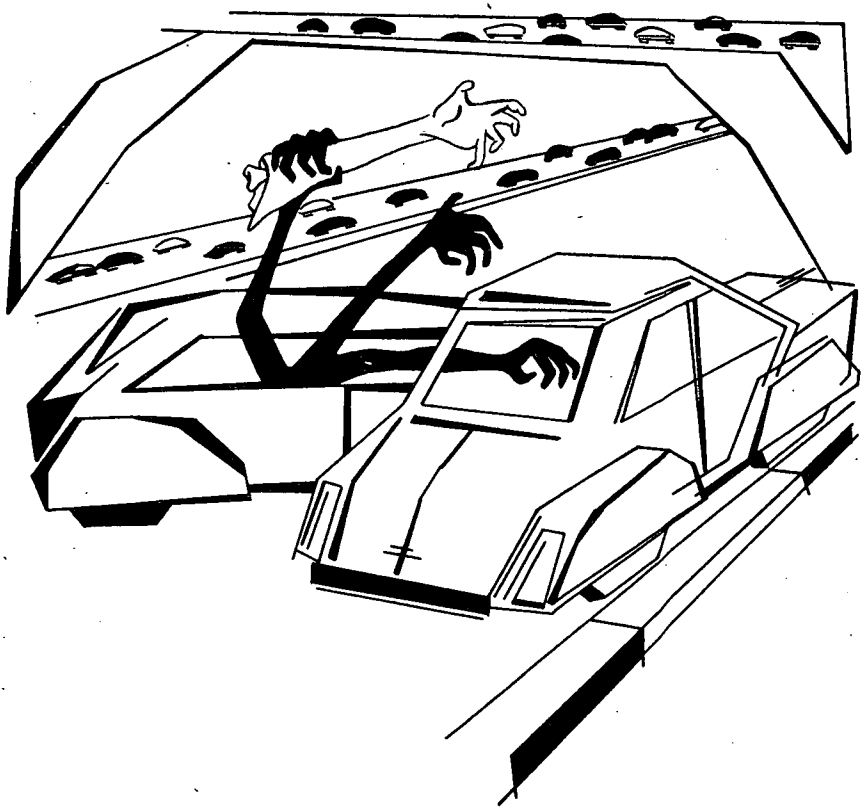

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Dickson-Hawes drew back abruptly. Now his face was not quite greenish; it was white. "My word, what a monster!" he gasped. "What is it, anyway?"

"Clockwork," Freeman answered. "It'll writhe for thirty-six hours on one winding. I couldn't use batteries, you know, on account of the water. That greenish flash in the eyes comes from prisms. And the hair is the same thing you get on those expensive fur coats, only longer. I think they call it plasti-mink."

"What happens if I keep leaning over? Or if I drop pebbles down on it?"

"It'll come out at you."

DICKSON-HAWES LOOKED disappointed. "Anything else?"

"The sky gets darker and noises come out of the house. Isn't that enough?"

Dickson-Hawes coughed. "Well, of course we'd have to soup it up a bit. Put an electrified rail around the well coping and perhaps make the approach to the well slippery so the customers would have to grasp the hand rail. Install a couple of air jets to blow the girls' dresses up. And naturally make it a good deal darker so couples can neck when the girl gets scared. But it's a nice little effort, Freeman, very nice indeed. I'm almost certain we can use it. Yes, we ought to have your well in our horror house."

Dickson-Hawes' voice had rung out strongly on the last few words. Now there came another watery splash from the well. Freeman seemed disturbed.

"I *told* you to keep your voice down," he complained. "The partitions are thin. When you talk that loud, you can be heard all over the place. It isn't good for the—machinery."

"Sorry."

"Don't let it happen again . . . I don't think the customers ought to neck in here. This isn't the place for it. If they've got to neck, let them do it outside. In the corridor."

"You have no idea, old chap, what people will do in a darkened corridor in a horror house. It seems to stimulate them. But you may be right. Letting them stay here to neck might spoil the illusion. We'll try to get them on out."

"Okay. How much are you paying me for this?"

"Our lawyer will have to discuss the details," said Dickson-Hawes. He gave Freeman a smile reeking with synthetic charm. "I assure you he can draw up a satisfactory contract. I can't be more definite until I know what the copyright or patent situation would be."

"I don't think my Well could

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be patented," Freeman said. "There are details in the machinery nobody understands but me. I'd have to install each unit in your horror house network myself. There ought to be a clause in the contract about my per diem expenses and a traveling allowance."

"I'm sure we can work out something mutually satisfactory."

"Uh . . . let's get out of here. This is an awfully damp place to do much talking in."

THEY WENT out into the hall again. Freeman locked the door. "Have you anything else?" Dickson-Hawes asked.

Freeman's eyes moved away. "No."

"Oh, come now, old chap. Don't be coy. As I told you before, there's *money* involved."

"What sort of thing do you want?"

"Well, horrid. Though not quite so poetically horrid as what you have behind the shutter. That's a little too much. Perhaps something with a trifle more action. With more customer participation. Both the Well and Spring Scene are on the static side."

"Uh."

They walked along the corridor. Freeman said slowly, "I've been working on something. There's action and customer participation in it, all right, but I don't know. It's full of bugs. I just haven't had time to work it out yet."

"Let's have it, old man, by all means!"

"Not so loud! You've got to keep your voice down. Otherwise I can't take you in." Freeman himself was speaking almost in a whisper. "All right. Here."

They had stopped before a much more substantial door than the one behind which the Well lay. There was a wide rubber flange all around it, and it was secured at top and bottom by two padlocked hasps. In the top of the door, three or four small holes had been bored, apparently to admit air.

"You must have something pretty hot locked up behind all that," Dickson-Hawes remarked.

"Yeah." Freeman got a key ring out of his pocket and began looking over it. Dickson-Hawes glanced around appraisingly.

"Somebody's been writing on your wall," he observed. "Rotten speller, I must say."

Freeman raised his eyes from the key ring and looked in the direction the other man indicated. On the wall opposite the door, just under the ceiling, somebody had written HORRER HOWCE in what looked like blackish ink.

The effect of the ill-spelled words on Freeman was remarkable. He dropped the key ring

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with a clatter, and when he straightened from picking it up, his hands were quivering.

"I've changed my mind," he said. He put the key ring back in his pocket. "I always did have the damnedest luck."

DICKSON-HAWES LEANED back against the wall and crossed his ankles. "How do you get your ideas, Freeman?"

"Oh, all sorts of ways. Things I read, things people tell me, things I see. All sorts of ways." Both men were speaking in low tones.

"They're amazing. And your mechanical effects — I really don't see how you get machinery to do the things you make it do."

Freeman smiled meagerly. "I've always been good at mechanics. Particularly radio and signaling devices. Relays. Communication problems, you might say. I can communicate with anything. Started when I was a kid."

There was a silence. Dickson-Hawes kept leaning against the wall. A close observer, Freeman noticed almost a tic, a fluttering of his left eyelid.

At last Freeman said, "How much are you paying for the Well?"

Dickson-Hawes closed his eyes and opened them again. He may have been reflecting that while a verbal contract is quite as binding as a written one, it is difficult to prove the existence of a verbal contract to which there are no witnesses.

He answered, "Five thousand in a lump sum, I think, and a prorated share of the net admissions for the first three years."

There was an even longer silence. Freeman's face relaxed at the mention of a definite sum. He said, "How are your nerves? I need money so damned bad."

Dickson-Hawes' face went so blank that it would seem the other man had touched a vulnerable spot. "Pretty good, I imagine," he said in a carefully modulated voice. "I saw a good deal of action during the war."

Cupidity and some other emotion contended in Freeman's eyes. He fished out the key ring again. "Look, you must not make a noise. No yelling or anything like that, no matter what you see. They're very — I mean the machinery's delicate. It's full of bugs I haven't got rid of yet. The whole thing will be a lot less ghastly later on. I'm going to keep the basic idea, make it just as exciting as it is now, but tone it down plenty."

"I understand."

Freeman looked at him with a frown. "Don't make a noise," he cautioned again. "Remember, none of this is real." He fitted the key into the first of the pad-

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locks on the stoutly built door.

The second padlock was a little stiff. Freeman had to fidget with it. Finally he got the door open. The two men stepped through it. They were outside.

THERE IS no other way of expressing it: They were outside. If the illusion had been good in the Well, here it was perfect. They stood in a sort of safety island on the edge of a broad freeway, where traffic poured by in an unending rush eight lanes wide. It was the time of day when, though visibility is really better than at noon, a nervous motorist or two has turned on his parking lights. Besides the two men, the safety island held a new, shiny, eggplant-colored sedan.

Dickson-Hawes turned a bewildered face on his companion. "Freeman," he said in a whisper, "did you *make* all this?"

For the first time, Freeman grinned. "Pretty good, isn't it?" he replied, also in a whisper. He opened the car door and slid into the driver's seat. "Get in. We're going for a ride. Remember, no noise."

The other man obeyed. Freeman started the car — it had a very quiet motor — and watched until a lull in the traffic gave him a chance to swing out from the curb. He stepped on the accelerator. The landscape began to move by.

Cars passed them. They passed some cars. Dickson-Hawes looked for the speedometer on the dashboard and couldn't find it. A garage, a service station, a billboard went by. The sign on the garage read: WE FIX FLATTEDS. The service station had conical pumps. The tomatoes on the billboard were purple and green.

Dickson-Hawes was breathing shallowly. He said, "Freeman — where *are* we?"

Once more, the other man grinned. "You're getting just the effect I mean to give," he retorted in a pleased whisper. "At first, the customer thinks he's on an ordinary freeway, with ordinary people hurrying home to their dinners. Then he begins to notice all sorts of subtle differences. Everything's a little off-key. It adds to the uneasiness."

"Yes, but — what's the object of all this? What are we trying to do?"

"Get home to our dinners, like everyone else."

"Where does the — well, difficulty come in?"

"Do you see that car in the outer lane?" They were still conversing in whispers. "Black, bullet-shaped, quite small, going very fast?"

"Yes."

"Keep your eye on it."

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The black car *was* going very fast. It caught up with a blue sedan in front of it, cut in on it and began to crowd it over to the curb. The blue sedan tried to shake off the black car, but without success. If the driver didn't want to be wrecked, he had to get over.

FOR A while, the two cars ran parallel. The black car began to slow down and crowd more aggressively than ever. Suddenly it cut obliquely in front of the sedan and stopped.

There was a frenzied scream of brakes from the sedan. It stopped with its left fender almost against the black bullet-shaped car. The bodies were so close, there was no room for the sedan driver to open his door.

Freeman had let the car he was driving slow down, presumably so Dickson-Hawes could see everything.

For a moment, there was nothing to see. Only for a moment. Then two — or was it three? — long, blackish, extremely thin arms came out from the black car and fumbled with the glass in the window of the sedan. The glass was forced down. The arms entered the sedan.

From the sedan there came a wild burst of shrieking. It was like the f l o p p i n g, horrified squawks of a chicken at the chopping block. The shrieks were still going on when the very thin arms came out with a —

The light hid nothing. The three very thin arms came out with a plucked-off human arm.

They threw it into the interior of the black car. The three arms invaded the sedan once more.

This time, Dickson-Hawes had turned neither white nor greenish, but a blotchy gray. His mouth had come open all around his teeth, in the shape of a rigid oblong with raised, corded edges. It was perfectly plain that if he was not screaming, it was solely because his throat was too paralyzed.

Freeman gave his passenger only a momentary glance. He was looking into the rear-view mirror. He began to frown anxiously.

THE SHRIEKING from the blue sedan had stopped. Dickson-Hawes covered his face with his hands while Freeman drove past it and the other car. When the group lay behind them, he asked in a shaking whisper, "Freeman, are there any more of them? The black cars, I mean?"

"Yeah. One of them's coming toward us now."

Dickson-Hawes' head swiveled around. Another of the black cars was h u r t l i n g toward them through the traffic, though it was still a long way behind.

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Dickson-Hawes licked his lips.

"Is it — after us?"

"I think so."

"But why? Why — us?"

"Part of the game. Wouldn't be horrid otherwise. Hold on. I'm going to try to shake it off."

Freeman stepped down on the accelerator. The eggplant-colored sedan shot ahead. It was a very fast car and Freeman was evidently an expert and nerveless driver. They slid through nonexistent holes in the traffic, glanced off from fenders, slipped crazily from lane to lane, a shuttle in a pattern of speed and escape.

The black car gained on them. No gymnastics. A bulletlike directness. But it was nearer all the time.

Dickson-Hawes gave a sort of whimper.

"No noise," Freeman cautioned in a fierce whisper. "That'll bring them down for sure. *Now!*"

He pressed the accelerator all the way down. The eggplant-colored car bounced and swayed. There was a tinkle of glass from the headlights of the car on the left as the sedan brushed it glancingly. Dickson-Hawes moaned, but realized they had gained the length of several cars. Momentarily, the black pursuer fell behind.

They went through two red lights in a row. So did the black bullet. It began to edge in on them. Closer and closer. Faster and faster.

Dickson-Hawes had slumped forward with his head on his chest. The black car cut toward them immediately.

Freeman snarled. Deliberately, he swung out into the path of the pursuer. For a second, it gave ground.

"Bastards," Freeman said grimly.

The black car cut in on them like the lash of a whip. The sedan slithered. Hub caps grated on concrete. The sedan swayed drunkenly. Brakes howled. Dickson-Hawes, opening his eyes involuntarily for the crash, saw that they were in a safety island. The same safety island, surely, from which they had started out?

The black car went streaking on by.

"I hate those things," Freeman said bitterly. "Damned Voom. If I could — But never mind. We got away. We're safe. We're home."

DICKSON-HAWES DID not move. "I said we're safe," Freeman repeated. He opened the car door and pushed the other man out through it. Half-shoving, half-carrying, he led him to the door from which they had entered the freeway. It was still the time of day at which nervous mo-

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torists turn on their parking lights.

Freeman maneuvered Dickson-Hawes through the door. He closed it behind them and fastened the padlocks in the hasps. They were out in the corridor again — the corridor on whose wall somebody had written HORRER HOWCE.

Freeman drew a deep breath. "Well. Worked better than I thought it would. I was afraid you'd yell. I thought you were the type that yells. But I guess the third time's the charm."

"What?"

"I mean I guess my goddam luck has turned at last. Yeah. What did you think of it?"

Dickson-Hawes swallowed, unable to answer.

Freeman regarded him. "Come along to my office and have a drink. You look like you need one. And then you can tell me what you think of this setup."

The office was in the front of the house, down a couple of steps. Dickson-Hawes sank into the chair Freeman pulled out for him. He gulped down Freeman's dubious reddish Bourbon gratefully.

After the second drink, he was restored enough to ask, "Freeman, was it real?"

"Certainly not," the other man said promptly.

"It looked awfully real," Dickson-Hawes objected. "That arm . . ." He shuddered.

"A dummy," Freeman answered promptly once more. "You didn't see any blood, did you? Of course not. It was a dummy arm."

"I hope so. I don't see how you could have *made* all the stuff we saw. There's a limit to what machinery can do. I'd like another drink."

Freeman poured. "What did you think of it?"

Color was coming back to Dickson-Hawes' cheeks. "It was the most horrible experience I ever had in my life."

Freeman grinned. "Good. People like to be frightened. That's why roller-coaster rides are so popular."

"Not that much, people don't. Nobody would enjoy a roller-coaster ride if he saw cars crashing all around him and people getting killed. You'll have to tone it down a lot. An awful lot."

"But you liked it?"

"On the whole, yes. It's a unique idea. But you'll have to tone it down about seventy-five per cent."

FREEMAN GRIMACED. "It can be done. But I'll have to have a definite commitment from you before I undertake such extensive changes."

"Um."

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"There are other places I could sell it, you know," Freeman said pugnaciously. "Jenkins of Amalgamated might be interested. Or Silberstein."

"Jenkins lit out with about six thousand of Amalgamated's dollars a couple of months ago. Nobody's seen him since. And they found Silberstein wandering on the streets last week in a sort of fit. Didn't you know? He's in a mental home. You won't be selling either of *them* much of anything."

Freeman sighed, but made no attempt to dispute these distressing facts. "I'll have to have a definite commitment from you before I make that many major changes," he repeated stubbornly.

"Well . . ." Fright and whiskey may have made Dickson-Hawes a little less cautious than usual. "We could pay you fifty a week for a couple of months while you worked on it, as advance against royalties. If we didn't like the final results, you wouldn't have to give back the advance."

"It's robbery. Apprentice mechanics earn more than that. Make it sixty-five."

"I hate haggling. Tell you what. We'll make it sixty."

Freeman shrugged tiredly. "Let's get it down in black and white. I'll just draw up a brief statement of the terms and you can sign it."

"Well, okay."

Freeman stooped and began to rummage in a desk drawer. Once he halted and seem to listen. He opened another drawer. "Thought I had some paper . . . Yeah, here it is." He turned on the desk light and began to write.

Dickson-Hawes leaned back in his chair and sipped at Freeman's whiskey. He crossed his legs and recrossed them. He was humming "Lili Marlene" loudly and off pitch. His head rested against the wall.

Freeman's pen moved across the paper. "That's about it," he said at last. He was smiling. "Yeah. I—"

There was a splintering crash, the sound of lath and plaster breaking. Freeman looked up from the unsigned agreement to see the last of his entrepreneurs —the last, the indubitable last— being borne off in the long black arms of the Voom.

It was the first time they had gone through the partitions in search of a victim, but the partitions were thin and the unsuccessful chase on the highway had excited them more than Freeman had realized. There has to be a first time for any entity, even for Voom.

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TEN FULL minutes passed. Dickson-Hawes' shrieks died away. The third episode had ended just as disastrously as the earlier two. There wasn't another entrepreneur in the entire U.S.A. from whom Freeman could hope to realize a cent for the contents of his horror house. He was sunk, finished, washed up.

Freeman remained sitting at his desk, motionless. All his resentment at the bad luck life had saddled him with—loyalty oaths, big deals that fell through, chiselers like Dickson-Hawes, types that yelled when the Voom were after them—had coalesced into an immobilizing rage.

At last he drew a quavering sigh. He went over to the bookcase, took out a book, looked up something. He took out a second book, a third.

He nodded. A gleam of blind, intoxicated vindictiveness had come into his eyes. Just a few minor circuit changes, that was all. He knew the other, more powerful entities were there. It was only a question of changing his signaling devices to get in touch with them.

Freeman put the book back on the shelf. He hesitated. Then he started toward the door. He'd get busy on the circuit changes right away. And while he was making them, he'd be running over plans for the horror house he was going to use the new entities to help him build.

It would be dangerous. So what? Expensive . . . he'd get the money somewhere. But he'd fix them. He'd build a horror house for the beasts that would make them sorry they'd ever existed —Horrer Howce for the Voom.

— MARGARET ST. CLAIR

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The Skills of

When a malignant world endangers another, surgery is the usual answer. But perhaps there is another — kill it with kindness!

Illustrated by FINLAY

AND the Sun went nova and humanity fragmented and fled; and such is the self-knowledge of humankind that it knew it must guard its past as it guarded its being, or it would cease to be human; and such was its pride in itself that it made of its traditions a ritual and a standard.

The great dream was that wherever humanity settled, fragment by fragment by fragment, however it lived, it would continue rather than begin again, so that all through the Universe and

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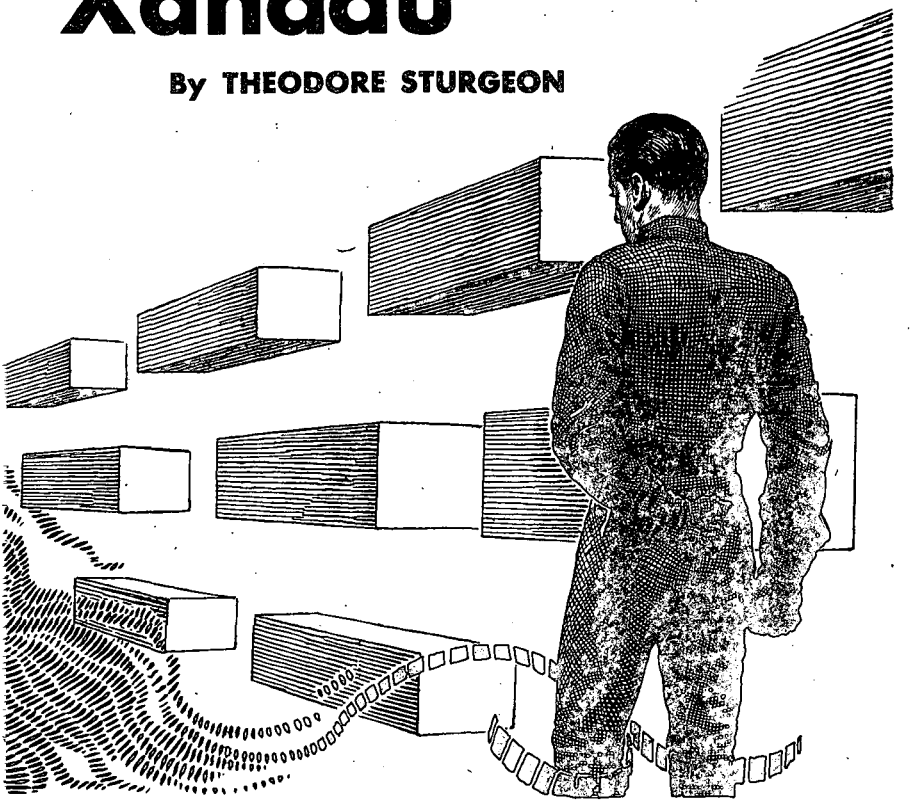
Xanadu

By THEODORE STURGEON



the years, humans would be humans, speaking as humans, thinking as humans, aspiring and progressing as humans; and whenever human met human, no matter how different, how distant, he would come in peace, meet his own kind, speak his own tongue.

Humans, however, being humans—

BRIL emerged near the pink star, disliking its light, and found the fourth planet. It hung waiting for him like an exotic fruit. (And was it ripe, and could he ripen

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it? And what if it were poison?) He left his machine in orbit and descended in a bubble. A young savage watched him come and waited by a waterfall.

"Earth was my mother," said Bril from the bubble. It was the formal greeting of all humankind, spoken in the Old Tongue.

"And my father," said the savage, in an atrocious accent.

Watchfully, Bril emerged from the bubble, but stood very close by it. He completed his part of the ritual. "I respect the disparity of our wants, as individuals, and greet you."

"I respect the identity of our needs, as humans, and greet you. I am Wonyne," said the youth, "son of Tanyne, of the Senate, and Nina. This place is Xanadu, the district, on Xanadu, the fourth planet."

"I am Bril of Kit Carson, second planet of the Sumner System, and a member of the Sole Authority," said the newcomer, adding, "and I come in peace."

HE WAITED then, to see if the savage would discard any weapons he might have, according to historic protocol. Wonyne did not; he apparently had none. He wore only a cobwebby tunic and a broad belt made of flat, black, brilliantly polished stones and could hardly have concealed so much as a dart. Bril waited yet another moment, watching the untroubled face of the savage, to see if Wonyne suspected anything of the arsenal hidden in the sleek black uniform, the gleaming jackboots, the metal gauntlets.

Wonyne said only, "Then, in peace, welcome." He smiled. "Come with me to Tanyne's house and mine, and be refreshed."

"You say Tanyne, your father, is a Senator? Is he active now? Could he help me to reach your center of government?"

The youth paused, his lips moving slightly, as if he were translating the dead language into another tongue. Then, "Yes. Oh, yes."

Bril flicked his left gauntlet with his right fingertips and the bubble sprang away and up, where at length it would join the ship until it was needed. Wonyne was not amazed — probably, thought Bril, because it was beyond his understanding.

Bril followed the youth up a winding path past a wonderland of flowering plants, most of them purple, some white, a few scarlet, and all jeweled by the waterfall. The higher reaches of the path were flanked by thick soft grass, red as they approached, pale pink as they passed.

Bril's narrow black eyes flicked everywhere, saw and recorded ev-

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erything: the easy-breathing boy spring up the slope ahead, and the constant shifts of color in his gossamer garment as the wind touched it; the high trees, some of which might conceal a man or a weapon; the rock outcroppings and what oxides they told of; the birds he could see and the bird-songs he heard which might be something else.

He was a man who missed only the obvious, and there is so little that is obvious.

Yet he was not prepared for the house; he and the boy were halfway across the parklike land which surrounded it before he recognized it as such.

It seemed to have no margins. It was here high and there only a place between flower beds; yonder a room became a terrace, and elsewhere a lawn was a carpet because there was a roof over it. The house was divided into areas rather than rooms, by open grilles and by arrangements of color. Nowhere was there a wall. There was nothing to hide behind and nothing that could be locked. All the land, all the sky, looked into and through the house, and the house was one great window on the world.

Seeing it, Bril felt a slight shift in his opinion of the natives. His feeling was still one of contempt, but now he added suspicion. A cardinal dictum on humans as he knew them was: *Every man has something to hide.* Seeing a mode of living like this did not make him change his dictum: he simply increased his watchfulness, asking: *How do they hide it?*

"Tan! Tan!" the boy was shouting. "I've brought a friend!"

A MAN and a woman strolled toward them from a garden. The man was huge, but otherwise so like the youth Wonyne that there could be no question of their relationship. Both had long, narrow, clear gray eyes set very wide apart, and red — almost orange — hair. The noses were strong and delicate at the same time, their mouths thin-lipped but wide and good-natured.

But the woman—

It was a long time before Bril could let himself look, let himself believe that there was such a woman. After his first glance, he made of her only a presence and fed himself small nibbles of belief in his eyes, in the fact that there could be hair like that, face, voice, body. She was dressed, like her husband and the boy, in the smoky kaleidoscope which resolved itself, when the wind permitted, into a black-belted tunic.

"He is Bril of Kit Carson in the Sumner System," babbled the boy, "and he's a member of the Sole Authority and it's the second

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planet and he knew the greeting and got it right. So did I," he added, laughing. "This is Tanyne, of the Senate, and my mother Nina."

"You are welcome, Bril of Kit Carson," she said to him; and unbelieving in this way that had come upon him, he took away his gaze and inclined his head.

"You must come in," said Tanyne cordially, and led the way through an arbor which was not the separate arch it appeared to be, but an entrance.

The room was wide, wider at one end than the other, though it was hard to determine by how much. The floor was uneven, graded upward toward one corner, where it was a mossy bank. Scattered here and there were what the eye said were white and striated gray boulders; the hand would say they were flesh. Except for a few shelf- and tablelike niches on these and in the bank, they were the only furniture.

Water ran frothing and gurgling through the room, apparently as an open brook; but Bril saw Nina's bare foot tread on the invisible covering that followed it down to the pool at the other end. The pool was the one he had seen from outside, indeterminately in and out of the house. A large tree grew by the pool and leaned its heavy branches toward the bank, and evidently its wide-flung limbs were webbed and tented between by the same invisible substance which covered the brook, or they formed the only cover overhead yet, to the ear, *felt* like a ceiling.

The whole effect was, to Bril, intensely depressing, and he surprised himself with a flash of homesickness for the tall steel cities of his home planet.

Nina smiled and left them. Bril followed his host's example and sank down on the ground, or floor, where it became a bank, or wall. Inwardly, Bril rebelled at the lack of decisiveness, of discipline, of clear-cut limitation inherent in such haphazard design as this. But he was well trained and quite prepared, at first, to keep his feelings to himself among barbarians.

"Nina will join us in a moment," said Tanyne.

Bril, who had been watching the woman's swift movements across the courtyard through the transparent wall opposite, controlled a start. "I am unused to your ways, and wondered what she was doing," he said.

"She is preparing a meal for you," explained Tanyne.

"Herself?"

TANYNE and his son gazed wonderingly. "Does that seem unusual to you?"

"I understood the lady was

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wife to a Senator," said Bril. It seemed adequate as an explanation, but only to him. He looked from the boy's face to the man's. "Perhaps I understand something different when I use the term 'Senator.'"

"Perhaps you do. Would you tell us what a Senator is on the planet Kit Carson?"

"He is a member of the Senate, subservient to the Sole Authority, and in turn leader of a free Nation."

"And his wife?"

"His wife shares his privileges. She might serve a member of the Sole Authority, but hardly anyone else—certainly not an unidentified stranger."

"Interesting," said Tanyne, while the boy murmured the astonishment he had not expressed at Bril's bubble, or Bril himself. "Tell me, have you not identified yourself, then?"

"He did, by the waterfall," the youth insisted.

"I gave you no proof," said Bril stiffly. He watched father and son exchanged a glance. "Credentials, written authority." He touched the flat pouch hung on his power belt.

Wonyne asked ingenuously, "Do the credentials say you are *not* Bril of Kit Carson in the Sumner System?"

Bril frowned at him, and Tanyne said gently, "Wonyne, take care." To Bril, he said, "Surely there are many differences between us, as there always are between different worlds. But I am certain of this one similarity: the young at times run straight where wisdom has built a winding path."

Bril sat silently and thought this out. It was probably some sort of apology, he decided, and gave a single sharp nod. Youth, he thought, was an attenuated defect here. A boy Wonyne's age would be a soldier on Carson, ready for a soldier's work, and no one would be apologizing for him. Nor would he be making blunders. *None!*

He said, "These credentials are for your officials when I meet with them. By the way, when can that be?"

Tanyne shrugged his wide shoulders. "Whenever you like."

"The sooner the better."

"Very well."

"Is it far?"

Tanyne seemed perplexed. "Is what far?"

"Your capital, or wherever it is your Senate meets."

"Oh, I see. It doesn't meet, in the sense you mean. It is always in session, though, as they used to say. We—"

HE COMPRESSED his lips and made a liquid, bisyllabic sound. Then he laughed. "I do beg your pardon," he said warmly.

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"The Old Tongue lacks certain words, certain concepts. What is your word for — er — the - presence - of - all - in - the - presence - of - one?"

"I think," said Bril carefully, "that we had better go back to the subject at hand. Are you saying that your Senate does not meet in some official place, at some appointed time?"

"I—" Tan hesitated, then nodded. "Yes, that is true as far as it—"

"And there is no possibility of my addressing your Senate in person?"

"I didn't say that." Tan tried twice to express the thought, while Bril's eyes slowly narrowed. Tan suddenly burst into laughter. "Using the Old Tongue to tell old tales and to speak with a friend are two different things," he said ruefully. "I wish you would learn our speech. Would you, do you suppose? It is rational and well based on what you know. Surely you have another language besides the Old Tongue on Kit Carson?"

"I honor the Old Tongue," said Bril stiffly, dodging the question. Speaking very slowly, as if to a retarded child, he said, "I should like to know when I may be taken to those in authority here, in order to discuss certain planetary and interplanetary matters with them."

"Discuss them with me."

"You are a Senator," Bril said, in a tone which meant clearly: *You are only a Senator.*

"True," said Tanyne.

With forceful patience, Bril asked, "And what is a Senator here?"

"A contact point between the people of his district and the people everywhere. One who knows the special problems of a small section of the planet and can relate them to planetary policy."

"And whom does the Senate serve?"

"The people," said Tanyne, as if he had been asked to repeat himself.

"Yes, yes, of course. And who, then, serves the Senate?"

"The Senators."

Bril closed his eyes and barely controlled the salty syllable which welled up inside him. "Who," he inquired steadily, "is your Government?"

The boy had been watching them eagerly, alternately, like a devotee at some favorite fast ball game. Now he asked, "What's a Government?"

NINA's interruption at that point was most welcome to Bril. She came across the terrace from the covered area where she had been doing mysterious things at a long work-surface in the garden. She carried an enormous

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tray — guided it, rather, as Bril saw when she came closer. She kept three fingers under the tray and one behind it, barely touching it with her palm. Either the transparent wall of the room disappeared as she approached, or she passed through a section where there was none.

"I do hope you find something to your taste among these," she said cheerfully, as she brought the tray down to a hummock near Bril. "This is the flesh of birds, this of small mammals, and, over here, fish. These cakes are made of four kinds of grain, and the white cakes here of just one, the one we call milk-wheat. Here is water, and these two are wines, and this one is a distilled spirit we call warm-ears."

Bril, keeping his eyes on the food, and trying to keep his universe from filling up with the sweet fresh scent of her as she bent over him, so near, said, "This is welcome."

She crossed to her husband and sank down at his feet, leaning back against his legs. He twisted her heavy hair gently in his fingers and she flashed a small smile up at him. Bril looked from the food, colorful as a corsage, here steaming, there gathering frost from the air, to the three smiling expectant faces, and did not know what to do.

"Yes, this is welcome," he said again, and still they sat there, watching him. He picked up the white cake and rose, looked out and around, into the house, through it and beyond. Where could one go in such a place?

Steam from the tray touched his nostrils and saliva filled his mouth. He was hungry, but . . .

He sighed, sat down, gently replaced the cake. He tried to smile and could not.

"Does none of it please you?" asked Nina, concerned.

"I can't eat here!" said Bril; then, sensing something in the natives that had not been there before, he added, "thank you." Again he looked at their controlled faces. He said to Nina, "It is very well prepared and good to look on."

"Then eat," she invited, smiling again.

This did something that their house, their garments, their appallingly easy ways — sprawling all over the place, letting their young speak up at will, the shameless admission that they had a patois of their own — that none of these things had been able to do. Without losing his implacable dignity by any slightest change of expression, he yet found himself blushing. Then he scowled and let the childish display turn to a flush of anger. He would be glad, he thought furiously, when he had the heart of

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this culture in the palm of his hand, to squeeze when he willed; then there would be an end to these hypocrital amenities and they would learn who could be humiliated.

BUT these three faces, the boy's so open and unconscious of wrong, Tanyne's so strong and anxious for him, Nina's — that face, that face of Nina's — they were all utterly guileless. He must not let them know of his embarrassment. If they had planned it, he must not give them the satisfaction. If they had not planned it, he must not let them suspect his vulnerability.

With an immense effort of will, he kept his voice low; still, it was harsh. "I think," he said slowly, "that we on Kit Carson regard the matter of privacy perhaps a little more highly than you do."

They exchanged an astonished look, and then comprehension dawned visibly on Tanyne's ruddy face. "You don't eat together!"

Bril did not shudder, but it was in his word: "No."

"Oh," said Nina, "I'm *so* sorry!"

Bril thought it wise not to discover exactly what she was sorry about. He said, "No matter. Customs differ. I shall eat when I am alone."

"Now that we understand," said Tanyne, "go ahead. Eat."

But they *sat* there!

"Oh," said Nina, "I wish you spoke our other language; it would be so easy to explain!" She leaned forward to him, put out her arms, as if she could draw meaning itself from the air and cast it over him. "Please try to understand, Bril. You are very mistaken about one thing — we honor privacy above almost anything else."

"We don't mean the same thing when we say it," said Bril.

"It *means aloneness with oneself*, doesn't it? It means to do things, think or make or just *be*, without intrusion."

"Unobserved," said Bril.

"So?" replied Wonyne happily, throwing out both hands in a gesture that said *quod erat demonstrandum*. "Go on then — eat! We won't look!" and helped the situation not at all.

"Wonyne's right," chuckled the father, "but, as usual, a little too direct. He means we can't look, Bril. If you want privacy, *we can't see you*."

Angry, reckless, Brill suddenly reached to the tray. He snatched up a goblet, the one she had indicated as water, thumbed a capsule out of his belt, popped it into his mouth, drank and swallowed. He banged the goblet back on the tray and shouted, "Now you've seen all you're going to see."

With an indescribable expres-

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sion, Nina drifted upward to her feet, bent like a dancer and touched the tray. It lifted and she guided it away across the courtyard.

"All right," said Wonyne. It was precisely as if someone had spoken and he had acknowledged. He lounged out, following his mother.

WHAT *had* been on her face? Something she could not contain; something rising to that smooth surface, about to reveal outlines, break through . . . anger? Bril hoped so. Insult? He could, he supposed, understand that. But — laughter? *Don't make it laughter*, something within him pleaded.

"Bril," said Tanyne.

For the second time, he was so lost in contemplation of the woman that Tanyne's voice made him start.

"What is it?"

"If you will tell me what arrangements you would like for eating, I'll see to it that you get them."

"You wouldn't know how," said Brill bluntly. He threw his sharp, cold gaze across the room and back. "You people don't build walls you can't see through, doors you can close."

"Why, no, we don't." As always, the giant left the insult and took only the words.

I bet you don't, Bril said silently, *not even for*—and a horrible suspicion began to grow within him. "We of Kit Carson feel that all human history and development are away from the animal, toward something higher. We are, of course, chained to the animal state, but we do what we can to eliminate every animal act as a public spectacle." Sternly, he waved a shining gauntlet at the great open house. "You have apparently not reached such an idealization. I have seen how you eat; doubtless you perform your other functions so openly."

"Oh, yes," said Tanyne. "But with this—" he pointed—"it's hardly the same thing."

"With what?"

Tanyne again indicated one of the boulderlike objects. He tore off a clump of moss—it was real moss—and tossed it to the soft surface of one of the boulders. He reached down and touched one of the gray streaks. The moss sank into the surface the way a pebble will in quicksand, but much faster.

"It will not accept living animal matter above a certain level of complexity," he explained, "but it instantly absorbs every molecule of anything else, not only on the surface but for a distance above."

"And that's a — a — where you—"

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Tan nodded and said that that was exactly what it was.

"But—anyone can *see* you!"

Tan shrugged and smiled. "How? That's what I meant when I said it's hardly the same thing. Of eating, we make a social occasion. But this—" he threw another clump of moss and watched it vanish—"just isn't observed." His sudden laugh rang out and again he said, "I *wish* you'd learn the language. Such a thing is so easy to express."

But Bril was concentrating on something else. "I appreciate your hospitality," he said, using the phrase stiltedly, "but I'd like to be moving on." He eyed the boulder distastefully. "And very soon."

"As you wish. You have a message for Xanadu. Deliver it, then."

"To your Government."

"To our Government. I told you before, Bril—when you're ready, proceed."

"I cannot believe that you alone represent this planet!

"Neither can I," said Tanyne pleasantly. "I don't. Through me, you can speak to forty-one others, all Senators."

"Is there no other way?"

Tanyne smiled. "Forty-one other ways. Speak to any of the others. It amounts to the same thing."

"And no higher government body?"

TANYNE reached out a long arm and plucked a goblet from a niche in the moss bank. It was chased crystal with a luminous metallic rim.

"Finding the highest point of the government of Xanadu is like finding the highest point on this," he said. He ran a finger around the inside of the rim and the goblet chimed beautifully.

"Pretty unstable," growled Bril.

Tanyne made it sing again and replaced it; whether that was an answer or not, Bril could not know.

He snorted, "No wonder the boy didn't know what Government was."

"We don't use the term," said Tanyne. "We don't need it. There are few things here that a citizen can't handle for himself; I wish I could show you how few. If you'll live with us a while, I will show you."

He caught Bril's eye squarely as it returned from another disgusted and apprehensive trip to the boulder, and laughed outright. But the kindness in his voice as he went on quenched Bril's upsurge of indignant fury, and a little question curled up: *Is he managing me?* But there wasn't time to look at it.

"Can your business wait until you know us, Bril? I tell you now, there is no centralized Government here, almost no govern-

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ment at all; we of the Senate are advisory. I tell you, too, that to speak to one Senator is to speak to all, and that you may do it now, this minute, or a year from now—whenever you like. I am telling you the truth and you may accept it or you may spend months, years, traveling this planet and checking up on me; you'll always come out with the same answer."

Noncommittally, Bril said, "How do I know that what I tell you is accurately relayed to the others?"

"It isn't relayed," said Tan frankly. "We all hear it simultaneously."

"Some sort of radio?"

Tan hesitated, then nodded. "Some sort of radio."

"I won't learn your language," Bril said abruptly. "I can't live as you do. If you can accept those conditions, I will stay a short while."

"Accept? We *insist*!" Tanyne bounded cheerfully to the niche where the goblet stood and held his palm up. A large, opaque sheet of a shining white material rolled down and stopped. "Draw with your finger," he said.

"Draw? Draw what?"

"A place of your own. How you would like to live, eat, sleep, everything."

"I require very little. None of us on Kit Carson do."

HE POINTED the finger of his gauntlet like a weapon, made a couple of dabs in the corner of the screen to test the line, and then dashed off a very creditable parallelopiped. "Taking my height as one unit, I'd want this one-and-a-half long, one-and-a-quarter high. Slit vents at eye level, one at each end, two on each side, screened against insects—"

"We have no preying insects," said Tanyne.

"Screened anyway, and with as near an unbreakable mesh as you have. Here a hook suitable for hanging a garment. Here a bed, flat, hard, with firm padding as thick as my hand, one-and-one-eighth units long, one-third wide. All sides under the bed enclosed and equipped as a locker, impregnable, and to which only I have the key or combination. Here a shelf one-third by one-quarter units, one-half unit off the floor, suitable for eating from a seated posture.

"One of—those, if it's self-contained and reliable," he said edgily, casting a thumb at the boulderlike convenience. "The whole structure to be separate from all others on high ground and overhung by nothing—no trees, no cliffs, with approaches clear and visible from all sides; as strong as speed permits; and equipped with a light I can turn off and a

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door that only I can unlock."

"Very well," said Tanyne easily. "Temperature?"

"The same as this spot now."

"Anything else? Music? Pictures? We have some fine moving—"

Bril, from the top of his dignity, snorted his most eloquent snort. "Water, if you can manage it. As to those other things, this is a dwelling, not a pleasure palace."

"I hope you will be comfortable in this—in it," said Tanyne, with barely a trace of sarcasm.

"It is precisely what I am used to," Bril answered loftily.

"Come, then."

"What?"

The big man waved him on and passed through the arbor. Bril, blinking in the late pink sunlight, followed him.

On the gentle slope above the house, halfway between it and the mountaintop beyond, was a meadow of the red grass Bril had noticed on his way from the waterfall. In the center of this meadow was a crowd of people, bustling like moths around a light, their flimsy, colorful clothes flashing and gleaming in a thousand shades. And in the middle of the crowd lay a coffin-shaped object.

BRIL could not believe his eyes, then stubbornly would not, and at last, as they came near, yielded and admitted it to himself: this was the structure he had just sketched.

He walked more and more slowly as the wonder of it grew on him. He watched the people — children, even — swarming around and over the little building, sealing the edge between roof and wall with a humming device, laying screen on the slit-vents. A little girl, barely a toddler, came up to him fearlessly and in lisping Old Tongue asked for his hand, which she clapped to a tablet she carried.

"To make your keys," explained Tanyne, watching the child scurry off to a man waiting at the door.

He took the tablet and disappeared inside, and they could see him kneel by the bed. A young boy overtook them and ran past, carrying a sheet of the same material the roof and walls were made of. It seemed light, but its slightly rough, pale-tan surface gave an impression of great toughness. As they drew up at the door, they saw the boy take the material and set it in position between the end of the bed and the doorway. He aligned it carefully, pressing it against the wall, and struck it once with the heel of his hand, and there was Bril's required table, level, rigid, and that without braces and supports.

"You seemed to like the looks

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of some of this, anyway." It was Nina, with her tray. She floated it to the new table, waved cheerfully and left.

"With you in a moment," Tan called, adding three singing syllables in the Xanadu tongue which were, Bril concluded, an endearment of some kind; they certainly sounded like it. Tan turned back to him, smiling.

"Well, Bril, how is it?"

Bril could only ask, "Who gave the orders?"

"You did," said Tan, and there didn't seem to be any answer to that.

Already, through the open door, he could see the crowd drifting away, laughing and singing their sweet language to each other. He saw a young man scoop up scarlet flowers from the pink sward and hand them to a smiling girl, and unaccountably the scene annoyed him. He turned away abruptly and went about the walls, thumping them and peering through the vents. Tanyne knelt by the bed, his big shoulders bulging as he tugged at the locker. It might as well have been solid rock.

"Put your hand there," he said, pointing, and Bril clapped his gauntlet to the plate he indicated.

Sliding panels parted. Bril got down and peered inside. It had its own light, and he could see the buff-colored wall of the structure at the back and the heavy filleted partition which formed the bed uprights. He touched the panel again and the doors slid silently shut, so tight that he could barely see their meeting.

"The door's the same," said Tanyne. "No one but you can open it. Here's water. You didn't say where to put it. If this is inconvenient. . ."

WHEN Bril put his hand near the spigot, water flowed into a catch basin beneath. "No, that is satisfactory. They work like specialists."

"They are," said Tanyne.

"Then they have built such a strange structure before?"

"Never."

Bril looked at him sharply. This ingenuous barbarian surely could not be making a fool of him by design! No, this must be some slip of semantics, some shift in meaning over the years which separated each of them from the common ancestor. He would not forget it, but he set it aside for future thought.

"Tanyne," he asked suddenly, "how many are you in Xanadu?"

"In the district, three hundred. On the planet, twelve, almost thirteen thousand."

"We are one and a half billions," said Bril. "And what is your largest city?"

"City," said Tanyne, as if searching through the files of his

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memory. "Oh — city! We have none. There are forty-two districts like this one, some larger, some smaller."

"Your entire planetary population could be housed in one building within one city on Kit Carson. And how many generations have your people been here?"

"Thirty-two, thirty-five, something like that."

"We settled Kit Carson not quite six Earth centuries ago. In point of time, then, it would seem that yours is the older culture. Wouldn't you be interested in how we have been able to accomplish so much more?"

"Fascinated," said Tanyne.

"You have some clever little handicrafts here," Bril mused, "and a quite admirable cooperative ability. You could make a formidable thing of this world, if you wanted to, and if you had the proper guidance."

"Oh, could we really?" Tanyne seemed very pleased.

"I must think," said Bril somberly. "You are not what I — what I had supposed. Perhaps I shall stay a little longer than I had planned. Perhaps while I am learning about your people, you in turn could be learning about mine."

"Delighted," said Tanyne. "Now is there anything else you need?"

"Nothing. You may leave me."

HIS autocratic tone gained him only one of the big man's pleasant, open-faced smiles. Tanyne waved his hand and left. Bril heard him calling his wife in ringing-baritone notes, and her glad answer. He set his mailed hand against the door plate and it slid shut silently.

Now what, he asked himself, *got me to do all that bragging?* Then the astonishment at the people of Xanadu rose up and answered the question for him. *What manner of people are specialists at something they have never done before?*

He got out his stiff, polished, heavy uniform, his gauntlets, his boots. They were all wired together, power supply in the boots, controls and computers in the trousers and belt, sensory mechs in the tunic, projectors and field loci in the gloves.

He hung the clothes on the hook provided and set the alarm field for anything larger than a mouse any closer than thirty meters. He dialed a radiation dome to cover his structure and exclude all spy beams or radiation weapons. Then he swung his left gauntlet on its cable over to the table and went to work on one small corner.

In half an hour, he had found a combination of heat and pressure that would destroy the pale brown board, and he sat down on

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the edge of the bed, limp with amazement. You could build a spaceship with stuff like this.

Now he had to believe that they had it in stock sizes exactly to his specifications, which would mean warehouses and manufacturing facilities capable of making up those and innumerable other sizes; or he had to believe that they had machinery capable of making what his torches had just destroyed, in job lots, right *now*.

But they didn't have any industrial plant to speak of, and if they had warehouses, they had them where the Kit Carson robot scouts had been unable to detect them in their orbiting for the last fifty years.

Slowly he lay down to think.

TO ACQUIRE a planet, you locate the central government. If it is an autocracy, organized tightly up to the peak, so much the better; the peak is small and you kill it or control it and use the organization. If there is no government at all, you recruit the people or you exterminate them. If there is plant, you run it with overseers and make the natives work it until you can train your own people to it and eliminate the natives. If there are skills, you learn them or you control those who have them. All in the book; a rule for every eventuality, every possibility.

But what if, as the robots reported, there was high technology and no plant? Planetwide cultural stability and almost no communications?

Well, nobody ever heard of such a thing, so when the robots report it, you send an investigator. All he has to find out is how they do it. All he has to do is to parcel up what is to be kept and what eliminated when the time comes for an expeditionary force.

There's always one clean way out, thought Bril, putting his hands behind his head and looking up at the tough ceiling. Item, one Earth-normal planet, rich in natural resources, sparsely populated by innocents. You can always simply exterminate them.

But not before you find out how they communicate, how they cooperate, and how they specialize in skills they never tried before. How they manufacture superior materials out of thin air in no time.

He had a sudden heady vision of Kit Carson equipped as these people were, a billion and a half universal specialists with some heretofore unsuspected method of intercommunication, capable of building cities, fighting wars, with the measureless skill and split-second understanding and obedience with which this little house had been built.

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No, these people must not be exterminated. They must be used. Kit Carson had to learn their tricks. If the tricks were—he hoped not!—inherent in Xanadu and beyond the Carson abilities, then what would be the next best thing?

Why, a cadre of the Xanadu, scattered through the cities and armies of Kit Carson, instantly obedient, instantly trainable. Instruct one and you teach them all; each could teach a group of Kit Carson's finest. Production, logistics, strategy, tactics — he saw it all in a flash.

Xanadu might be left almost

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exactly as is, except for its new export—aides de camp.

Dreams, these are only dreams, he told himself sternly. *Wait until you know more. Watch them make impregnable hardboard and anti-grav tea-trays. . .*

The thought of the tea-tray made his stomach growl. He got up and went to it. The hot food steamed, the cold was still frosty and firm. He picked, he tasted. Then he bit. Then he gobbled.

Nina, that Nina . . .

No, they can't be exterminated, he thought drowsily, not when they can produce such a woman. In all of Kit Carson, there wasn't a cook like that.

He lay down again and dreamed, and dreamed until he fell asleep.

THEY were completely frank. They showed him everything, and it apparently never occurred to them to ask him why he wanted to know. Asking was strange, because they seemed to lack that special pride of accomplishment one finds in the skilled potter, metalworker, electronician, an attitude of "Isn't it remarkable that I can do it!" They gave information accurately but impersonally, as if anyone could do it.

And on Xanadu, anyone could.

At first, it seemed to Bril totally disorganized. These attractive people in their indecent garments came and went, mingling play and work and loafing, without apparent plan. But their play would take them through a flower-garden just where the weeds were, and they would take the weeds along. There seemed to be a group of girls playing jacks right outside the place they would

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suddenly be needed to sort some seeds.

Tanyne tried to explain it: "Say we have a shortage of something—oh, strontium, for example. The shortage itself creates a sort of vacuum. People without anything special to do feel it; they think about strontium. They come, they gather it."

"But I have seen no mines," Bril said puzzledly. "And what about shipping? Suppose the shortage is here and the mines in another district?"

"That never happens any more. Where there are deposits, of course, there are no shortages. Where there are none, we find other ways, either to use something else, or to produce it without mines."

"Transmute it?"

"Too much trouble. No, we breed a fresh-water shellfish with a strontium carbonate shell instead of calcium carbonate. The children gather them for us when we need it."

He saw their clothing industry —part shed, part cave, part forest glen. There was a pool there where the young people swam, and a field where they sunned themselves. Between times, they went into the shadows and worked by a huge vessel where chemicals occasionally boiled, turned bright green, and then precipitated. The black precipitate was raised from the bottom of the vessel on screens, dumped into forms and pressed.

Just how the presses — little more than lids for the forms— operated, the Old Tongue couldn't tell him, but in four or five seconds the precipitate had turned into the black stones used in their belts, formed and polished, with a chemical formula in Old Tongue script cut into the back of the left buckle.

"One of our few supersitions," said Tanyne. "It's the formula for the belts—even a primitive chemistry could make them. We would like to see them copied, duplicated all over the Universe. They are what we are. Wear one, Bril. You would be one of us, then."

BRIL snorted in embarrassed contempt and went to watch two children deftly making up the belts, as easily, and with the same idle pleasure, as they might be making flower necklaces in a minute or two. As each was assembled, the child would strike it against his own belt. All the colors there are would appear each time this happened, in a brief, brilliant, cool flare. Then the belt, now with a short trim of vague tongued light, was tossed in a bin.

Probably the only time Bril permitted himself open astonish-

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ment on Xanadu was the first time he saw one of the natives put on this garment. It was a young man, come dripping from the pool. He snatched up a belt from the bank and clasped it around his waist, and immediately color and substance flowed up and down, a flickering, changing collar for him, a moving coruscant kilt.

"It's alive, you see," said Tanyne. "Rather, it is not non-living matter."

He put his fingers under the hem of his own kilt and forced his fingers up and outward. They penetrated the fabric, which fluttered away—untorn.

"It is not," he said gravely, "altogether material, if you will forgive an Old Tongue pun. The nearest Old Tongue term for it is 'aura.' Anyway, it lives, in its way. It maintains itself for—oh, a year or more. Then dip it in lactic acid and it is refreshed again. And just one of them could activate a million belts or a billion—how many sticks can a fire burn?"

"But why wear such a thing?"

Tanyne laughed. "Modesty." He laughed again. "A scholar of the very old times, on Earth before the Nova, passed on to me the words of one Rudofsky: 'Modesty is not so simple a virtue as honesty.' We wear these because they are warm when we need warmth, and because they conceal some defects some of the time—surely all one can ask of any human affectation."

"They are certainly not modest," said Bril stiffly.

"They express modesty just to the extent that they make us more pleasant to look at with than without them. What more public expression of humility could you want than that?"

Bril turned his back on Tanyne and the discussion. He understood Tanyne's words and ways imperfectly to begin with, and this kind of talk left him bewildered, or unreached, or both.

HE FOUND out about the hardboard. Hanging from the limb of a tree was a large vat of milky fluid—the paper, Tan explained, of a wasp they had developed, dissolved in one of the nucleic acids which they synthesized from a native weed. Under the vat was a flat metal plate and a set of movable fences. These were arranged in the desired shape and thickness of the finished panel, and then a cock was opened and the fluid ran in and filled the enclosure. Thereupon two small children pushed a roller by hand across the top of the fences. The white lake of fluid turned pale brown and solidified, and that was the hardboard.

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Tanyne tried his best to explain to Bril about that roller, but the Old Tongue joined forces with Bril's technical ignorance and made the explanation incomprehensible. The coating of the roller was as simple in design, and as complex in theory, as a transistor, and Bril had to let it go at that, as he did with the selective analysis of the boulder-like "plumbing" and the anti-grav food trays (which, he discovered, had to be guided outbound, but which "homed" on the kitchen-area when empty).

He had less luck, as the days went by, in discovering the nature of the skills of Xanadu. He had been quite ready to discard his own dream as a fantasy, an impossibility—the strange idea that what any could do, all could do. Tanyne tried to explain; at least, he answered every one of Bril's questions.

These wandering, indolent, joyful people could pick up anyone's work at any stage and carry it to any degree. One would pick up a flute and play a few notes, and others would stroll over, some with instruments and some without, and soon another instrument and another would join in, until there were fifty or sixty and the music was like a passion or a storm, or after-love or sleep when you think back on it.

And sometimes the bystanders would step forward and take an instrument from the hands of someone who was tiring, and play on with all the rest, pure and harmonious; and, no, Tan would aver, he didn't think they'd ever played that particular piece of music before, those fifty or sixty people.

It always got down to *feeling*, in Tan's explanations.

"It's a *feeling* you get. The violin, now; I've heard one, we'll say, but never held one. I watch someone play and I understand how the notes are made. Then I take it and do the same, and as I concentrate on making the note, and the note that follows, it comes to me not only how it should sound, but how it should *feel*—to the fingers, the bowing arm, the chin and collarbone. Out of those feelings comes the feeling of how it feels to be making such music.

"Of course, there are limitations," he admitted, "and some might do better than others. If my fingertips are soft, I can't play as long as another might. If a child's hands are too small for the instrument, he'll have to drop an octave or skip a note. But the feeling's there, when we think in that certain way.

"It's the same with anything else we do," he summed up. "If I need something in my house, a machine, a device, I won't use

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iron where copper is better; it wouldn't *feel* right for me. I don't mean feeling the metal with my hands; I mean thinking about the device and its parts and what it's for. When I think of all the things I could make it of, there's only one set of things that feels right to me."

"SO," SAID Bril then. "And that, plus this — this competition between the districts, to find all elements and raw materials in the neighborhood instead of sending for them — that's why you have no commerce. Yet you say you're standardized — at any rates, you all have the same kind of devices, ways of doing things."

"We all have whatever we want and we make it ourselves, yes," Tan agreed.

In the evenings, Bril would sit in Tanyne's house and listen to the drift and swirl of conversation, or the floods of music, and wonder; and then he would guide his tray back to his cubicle and lock the door and eat, and brood. He felt at times that he was under an attack with weapons he did not understand, on a field which was strange to him.

He remembered something Tanyne had said once, casually, about men and their devices: "Ever since there were human beings, there has been conflict between Man and his machines. They will run him or he them; it's hard to say which is the less disastrous way. But a culture which is composed primarily of men has to destroy one made mostly of machines, or be destroyed. It was always that way. We lost a culture once on Xanadu. Didn't you ever wonder, Bril, why there are so few of us here? And why almost all of us have red hair?"

Bril had, and had secretly blamed the small population on the shameless lack of privacy, without which no human race seems to be able to whip up enough interest in itself to breed readily.

"We were billions, once," said Tan surprisingly. "We were wiped out. Know how many were left? *Three*!"

That was a black night for Bril, when he realized how pitiable were his efforts to learn their secret. For if a race were narrowed to a few, and a mutation took place, and it then increased again, the new strain could be present in all the new generations. He might as well, he thought, try to wrest from them the secret of having red hair. That was the night he concluded that these people would have to go; and it hurt him to think that, and he was angry at himself for thinking so. That, too, was the night of the ridiculous disaster.

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HE LAY on his bed, grinding his teeth in helpless fury. It was past noon and he had been there since he awoke, trapped by his own stupidity, and ridiculous, ridiculous. His greatest single possession — his dignity — was stripped from him by his own carelessness, by a fiendish and unsportsmanlike gadget that—

His approach alarm hissed and he sprang to his feet in an agony of embarrassment, in spite of the strong opaque walls and the door which only he could open.

It was Tanyne; his friendly greeting bugled out and mingled with birdsong and the wind. "Bril! You there?"

Bril let him come a little closer and then barked through the vent, "I'm not coming out." Tanyne stopped dead, and even Bril himself was surprised by the harsh, squeezed sound of his voice.

"But Nina asked for you. She's going to weave today; she thought you'd like—"

"No," snapped Bril. "Today I leave. Tonight, that is. I've summoned my bubble. It will be here in two hours. After that, when it's dark, I'm going."

"Bril, you can't. Tomorrow I've set up a sintering for you; show you how we plate—"

"No!"

"Have we offended you, Bril? Have I?"

"No." Bril's voice was surly, but at least not a shout.

"What's happened?"

Bril didn't answer.

Tanyne came closer. Bril's eyes disappeared from the slit. He was cowering against the wall, sweating.

Tanyne said, "Something's happened, something's wrong. I . . . feel it. You know how I feel things, my friend, my good friend Bril."

The very thought made Bril stiffen in terror. Did Tanyne know? Could he?

He might, at that. Bril damned these people and all their devices, their planet and its sun and the fates which had brought him here.

"There is nothing in my world or in my experience you can't tell me about. You know I'll understand," Tanyne pleaded. He came closer. "Are you ill? I have all the skills of the surgeons who have lived since the Three. Let me in."

"No!" It was hardly a word; it was an explosion.

Tanyne fell back a step. "I beg your pardon, Bril. I won't ask again. But—tell me. Please tell me. I must be able to help you!"

All right, thought Bril, half hysterically, *I'll tell you and you can laugh your fool red head off. It won't matter once we seed your planet with Big Plague.* "I

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can't come out. I've ruined my clothes."

"Bril! What can that matter? Here, throw them out; we can fix them, no matter what it is."

"No!" He could just see what would happen with these universal talents getting hold of the most compact and deadly armory this side of the Sumner System.

"Then wear mine." Tan put his hands to the belt of black stones.

"I wouldn't be seen dead in a flimsy thing like that. Do you think I'm an exhibitionist?"

WITH more heat (it wasn't much) than Bril had ever seen in him, Tanyne said, "You've been a lot more conspicuous in those winding sheets you've been wearing than you ever would in this."

Bril had never thought of that. He looked longingly at the bright nothing which flowed up and down from the belt, and then at his own black harness, humped up against the wall under its hook. He hadn't been able to bear the thought of putting them back on since the accident happened, and he had not been this long without clothes since he'd been too young to walk.

"What happened to your clothes, anyway?" Tan asked sympathetically.

Laugh, thought Bril, *and I'll kill you right now and you'll never have a chance to see your race die.* "I sat down on the— I've been using it as a chair; there's only room for one seat in here. I must have kicked the switch. I didn't even feel it until I got up. The whole back of my —" Angrily he blurted, "Why doesn't that ever happen to you people?"

"Didn't I tell you?" Tan said, passing the news item by as if it meant nothing. Well, to him it probably was nothing. "The unit only accepts non-living matter."

"Leave that thing you call clothes in front of the door," Bril grunted after a strained silence. "Perhaps I'll try it."

Tanyne tossed the belt up against the door and strode away, singing softly. His voice was so big that even his soft singing seemed to go on forever.

But eventually Bril had the field to himself, the birdsong and the wind. He went to the door and away, lifted his seatless breeches sadly and folded them out of sight under the other things on the hook. He looked at the door again and actually whimpered once, very quietly. At last he put the gauntlet against the doorplate, and the door, never designed to open a little way, obediently slid wide. He squeaked, reached out, caught up the belt, scampered back and slapped at the plate.

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"No one saw," he told himself urgently.

He pulled the belt around him. The buckle parts knew each other like a pair of hands.

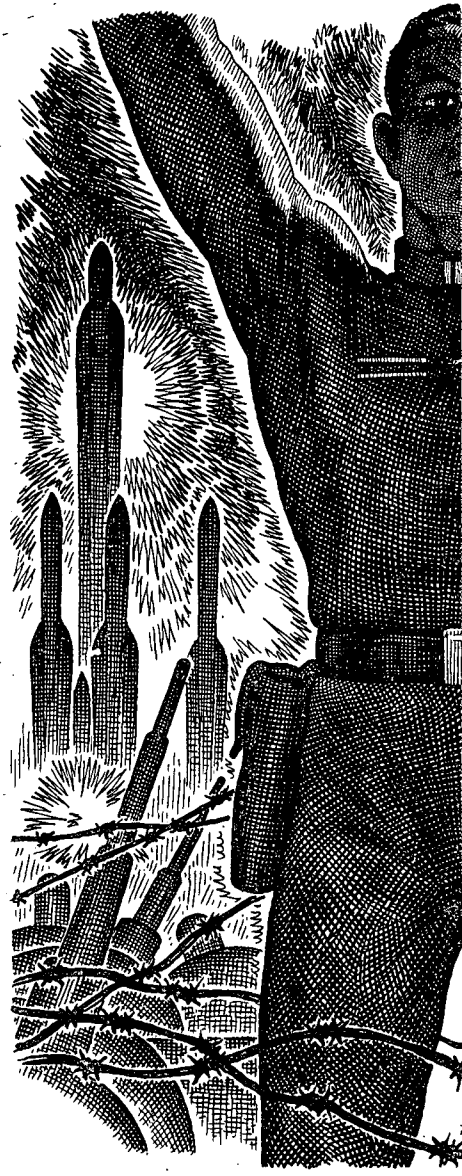
THE first thing he was aware of was the warmth. Nothing but the belt touched him anywhere and yet there was a warmth on him, soft, safe, like a bird's breast on eggs. A split second later, he gasped.

How could a mind fill so and not feel pressure? How could so much understanding flood into a brain and not break it?

He understood about the roller which treated the hardboard; it *was* a certain way and no other, and he could feel the rightness of that sole conjecture.

He understood the ions of the mold-press that made the belts, and the life-analog he wore as a garment. He understood how his finger might write on a screen, and the vacuum of demand he might send out to have this house built so, and so, and exactly so; and how the natives would hurry to fill it.

He remembered without effort Tanyne's description of the *feel* of playing an instrument, making, building, molding, holding, sharing, and how it must be to play in a milling crowd beside a task, moving randomly and only for pleasure, yet taking someone's



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place at vat or bench, furrow or fishnet, the very second another laid down a tool.

He stood in his own quiet flame, in his little coffin-cubicle, looking at his hands and knowing without question that they would build him a model of a city on Kit Carson if he liked, or a statue of the soul of the Sole Authority.

He knew without question that he had the skills of this people, and that he could call on any of those skills just by concentrating on a task until it came to him how the right way (for him) would *feel*. He knew without surprise that these resources transcended even death; for a man could have a skill and then it was everyman's, and if the man should die, his skill still lived in everyman.

Just by concentrating — that was the key, the keyway, the keystone to the nature of this device. A device, that was all — no mutations, nothing 'extra-sensory' (whatever that meant); only a machine like other machines. You have a skill, and a feeling about it; I have a task. Concentration on my task sets up a demand for your skill; through the living flame you wear, you transmit; through mine, I receive. Then I perform; and what bias I put upon that performance depends on my capabilities. Should I add something to that skill,

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then mine is the higher, the more complete; the *feeling* of it is better, and it is I who will transmit next time there is a demand.

AND he understood the authority that lay in this new aura, and it came to him then how his home planet could be welded into a unit such as the Universe had never seen. Xanadu had not done it, because Xanadu had grown randomly with its gift, without the preliminary pounding and shaping and milling of authority and discipline.

But Kit Carson! Carson with all skills and all talents shared among all its people, and overall and commanding, creating that vacuum of need and instant fulfilment, the Sole Authority and the State. It must be so (even though, far down, something in him wondered why the State kept so much understanding away from its people), for with this new depth came a solemn new dedication to his home and all it stood for.

Trembling, he unbuckled the belt and turned back its left buckle. Yes, there it was, the formula for the precipitate. And now he understood the pressing process and he had the flame to strike into new belts and make them live—by the millions, Tanyne had said, the billions.

Tanyne had said . . . why had he never said that the garments of Xanadu were the source of all their wonders and perplexities?

But had Bril ever asked?

Hadn't Tanyne begged him to take a garment so he could be one with Xanadu? The poor earnest idiot, to think he could be swayed away from Carson this way! Well, then, Tanyne and his people would have an offer, too, and it would all be even; soon they could, if they would, join the shining armies of a new Kit Carson.

From his hanging black suit, a chime sounded. Bril laughed and gathered up his old harness and all the fire and shock and paralysis asleep in its mighty, compact weapons. He slapped open the door and sprang to the bubble which waited outside, and flung his old uniform in to lie crumpled on the floor, a broken chrysalis. Shining and exultant, he leaped in after it and the bubble sprang away skyward.

WITHIN a week after Bril's return to Kit Carson in the Sumner System, the garment had been duplicated, and duplicated again, and tested.

Within a month, nearly two hundred thousand had been distributed, and eighty factories were producing round the clock.

Within a year, the whole planet, all the millions, were shining

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and unified as never before, moving together under their Leader's will like the cells of a hand.

And then, in shocking unison, they all flickered and dimmed, every one, so it was time for the lactic acid dip which Bril had learned of. It was done in panic, without test or hesitation; a small taste of this luminous subjection had created a mighty appetite. All was well for a week—

And then, as the designers in Xanadu has planned, all the other segments of the black belts joined the first meager two in full operation.

A billion and a half human souls, who had been given the techniques of music and the graphic arts, and the theory of technology, now had the others: philosophy and logic and love; sympathy, empathy, forbearance, unity in the idea of their species rather than in their obedience; membership in harmony with all life everywhere.

A people with such feelings and their derived skills cannot be slaves. As the light burst upon them, there was only one concentration possible to each of them — to be free, and the accomplished feeling of being free. As each found it, he was an expert in freedom, and expert succeeded expert, transcended expert, until (in a moment) a billion and a half human souls had no greater skill than the talent of freedom.

So Kit Carson, as a culture, ceased to exist, and something new started there and spread through the stars nearby.

And because Bril knew what a Senator was and wanted to be one, he became one.

IN EACH other's arms, Tanyne and Nina were singing softly, when the goblet in the mossy niche chimed.

"Here comes another one," said Wonyne, crouched at their feet. "I wonder what will make *him* beg, borrow or steal a belt."

"Doesn't matter," said Tanyne, stretching luxuriously, "as long as he gets it. Which one is he, Wo— that noisy mechanism on the other side of the small moon?"

"No," said Wonyne. "That one's still sitting there squalling and thinking we don't know it's there. No, this is the force-field that's been hovering over Fleetwing District for the last two years."

Tanyne laughed. "That'll make conquest number eighteen for us."

"Nineteen," corrected Nina dreamily. "I remember because eighteen was the one that just left and seventeen was that funny little Bril from the Sumner System. Tan, for a time that little man loved me." But that was a small thing and did not matter.

—THEODORE STURGEON

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(Continued from page 4)
human mathematician to prove this or even understand it.

"*'Did you know that Chinese is spoken by more people than anybody else?'* This implies that beings other than people speak Chinese. The only comfort I can find in the remark is that we outnumber them.

"*'While you're out in the kitchen, dear, the uncoffee should be plugged.'* I don't feel that this statement requires comment. Anyone can see that the washeepots need coughing because they are full of uncoffee that hasn't been plugged.

"I don't know whether or not this is relevant, but we have a ten-month-old daughter who wakes up every night and chuckles delightedly in the dark at something we can't see or hear. At any rate, my wife *claims* she can't see or hear it. I know *I* can't."

There may be more here than meets the eye, but what meets the eye is certainly disturbing enough. That overwrought iron, for example — if metal can get fatigued and X-rays can detect it, what makes you think your wife can't sense nervousness in at least iron? If she is able to, *what else can she sense?*

Now maybe you see why I don't share your comfort in the fact that we outnumber the beings who speak Chinese. One machine gun, remember, could have won any war before 1863 or so. And have you noticed that she has not mentioned *any other language?*

However, you're safe. Whatever happens, your wife can probably protect you. If not, your daughter can — she seems on the best of terms with the thing or things in the dark, and half her loyalty presumably is, if not to humanity, then to her dad.

But what of the rest of us? Those *'platations from Quoto'* sound formidable enough to upset anyone who knows military organization. This uneasiness is not lulled by the least baffling communication from the alien respondents:

"Of time some courses I can't see my face in front of my hand and some people don't think I think like a people.

"But I do. I just go bored from without and say things brightly through a mirror dark-wards. It is only a profound disassociation of intent and meaning. Any human can do."

Very homy-sounding . . . but at the bottom of the letter is a pink blur, 2.1508 inches across, that looks like a vast fingerprint. It isn't, though. I checked with a friend who knows fingerprinting.

It's the mark of a bare heel.

—H. L. GOLD

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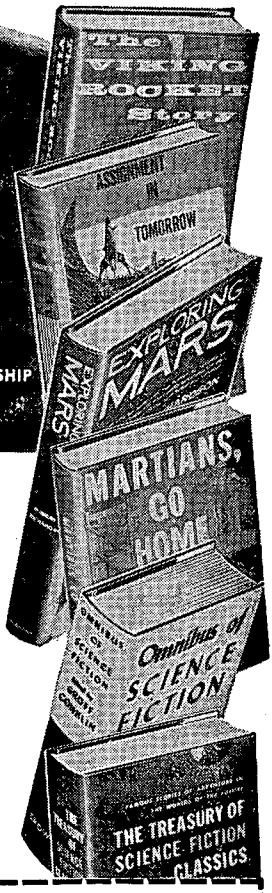

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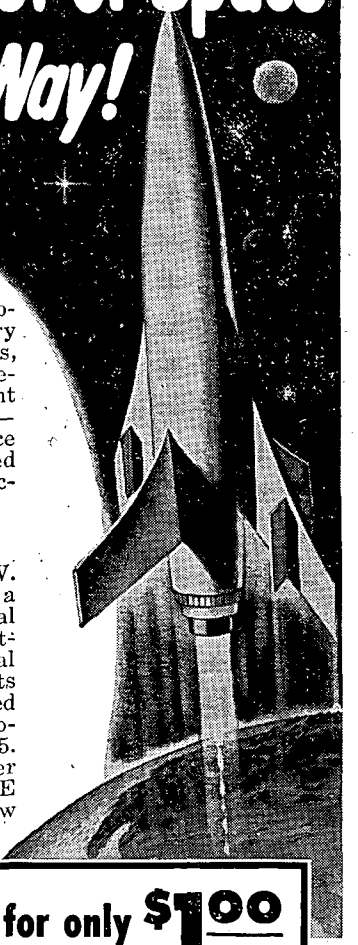

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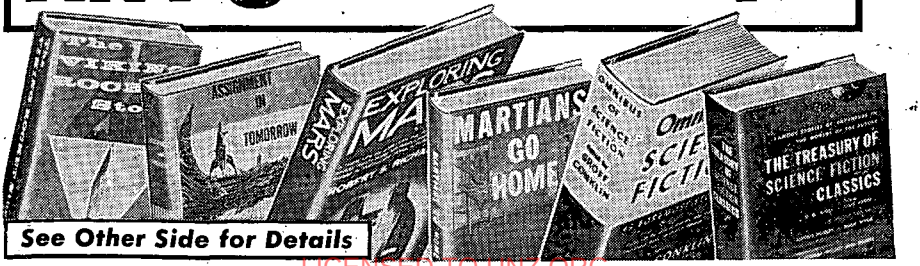

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